
BLUE BOOK & CATALOG

For the Soap, Insecticide, Disinfectant
and Allied Industries

1934



GIVAUDAN-DELAWANNA, INC.

**"HEADQUARTERS
FOR
AROMATIC PRODUCTS"**

We can supply aromatic products for every need.
Our branch offices are located conveniently
throughout the country.

BRANCH OFFICES:

PHILADELPHIA, LOS ANGELES, ATLANTA, CINCINNATI, DETROIT, DALLAS,
BALTIMORE, NEW ORLEANS, CHICAGO, SAN FRANCISCO,
MONTREAL, HAVANA.



See page 33 for
further news of
Givaudan-DeLawanna Products

80 FIFTH AVENUE, NEW YORK

BASIC MATERIALS for Soaps & Perfumes

▼▼▼▼

WE ARE headquarters for all the important domestic made aromatics of a prime quality used in soaps and perfumes. Included among these are:

Citral	Eugenol
Geraniol	Iso Eugenol
Citronellol	Benzophenone
Benzyl Acetate	Acetophenone
Benzyl Alcohol	Linalyl Acetate
Hydroxycitronellal	
Alpha Amyl Cinnamic Aldehyde	
Phenyl Ethyl Alcohol	

THE UNGERER standard of quality for basic aromatic materials has long been recognized by the American perfume and soap manufacturer. We solicit your inquiries for testing samples and quotations.



UNGERER & CO.

13-15 West 20th Street
NEW YORK

Say you saw it in the SOAP BLUE BOOK



FINE CHEMICAL PRODUCTS

for the soap manufacturer

GERANIOL
BENZOPHENONE CRYSTALS
PURE CITRAL
PURE CITRONELLOL
RHODIONE AB
RHODIONE CRUDE
METHYL RHODIONE
DIMETHYL HYDROQUINONE
TERPINEOL
ISO BORNYL ACETATE
HYDROXYCITRONELLAL

ALSO the famous SCUR products manufactured by Societe
des Usines Chemiques, Rhone-Poulenc, Paris, France

AMANDOL, Scur **AUBEPINE LIQUID, Scur** **COUMARIN, Scur**
LINALOOL EXTRA, Scur **LINALYL ACETATE, Scur** **MUGOL, Scur**

Accurate chemical control assures the
purity and uniformity of these products

E. I. DU PONT DE NEMOURS & CO., INC.
ORGANIC CHEMICALS DEPARTMENT

Fine Chemicals Division

WILMINGTON, DELAWARE

61 THOMAS STREET
NEW YORK CITY

7 SOUTH DEARBORN STREET
CHICAGO, ILL.

BLUE BOOK and CATALOG

for the Soap, Insecticide, Disinfectant
and Allied Industries



Sixth Edition

1934



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Buyers' Guide Section	Page 69
Appendix	Page 129

Published by

MAC NAIR - DORLAND COMPANY, INC.

136 LIBERTY STREET

NEW YORK

HUDSON

*No matter what your spraying
problem may be, it's a pretty
sure bet that HUDSON will
have the right answer
There is a
Hudson Sprayer for anything
to be sprayed.*

Technique

H. D. HUDSON MFG. CO.

589 E. ILLINOIS STREET

CHICAGO

Reed MAR 8 1934

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1934 G.1

Foreword

THE BLUE BOOK and CATALOG of the Soap, Insecticide, Disinfectant and Allied Industries appears in a new and revised form this year. For the convenience of users all advertisements have been grouped in a special catalog section starting on Page 9 and arranged in alphabetical order. Buyers' guide listings follow in another special section starting on Page 69.

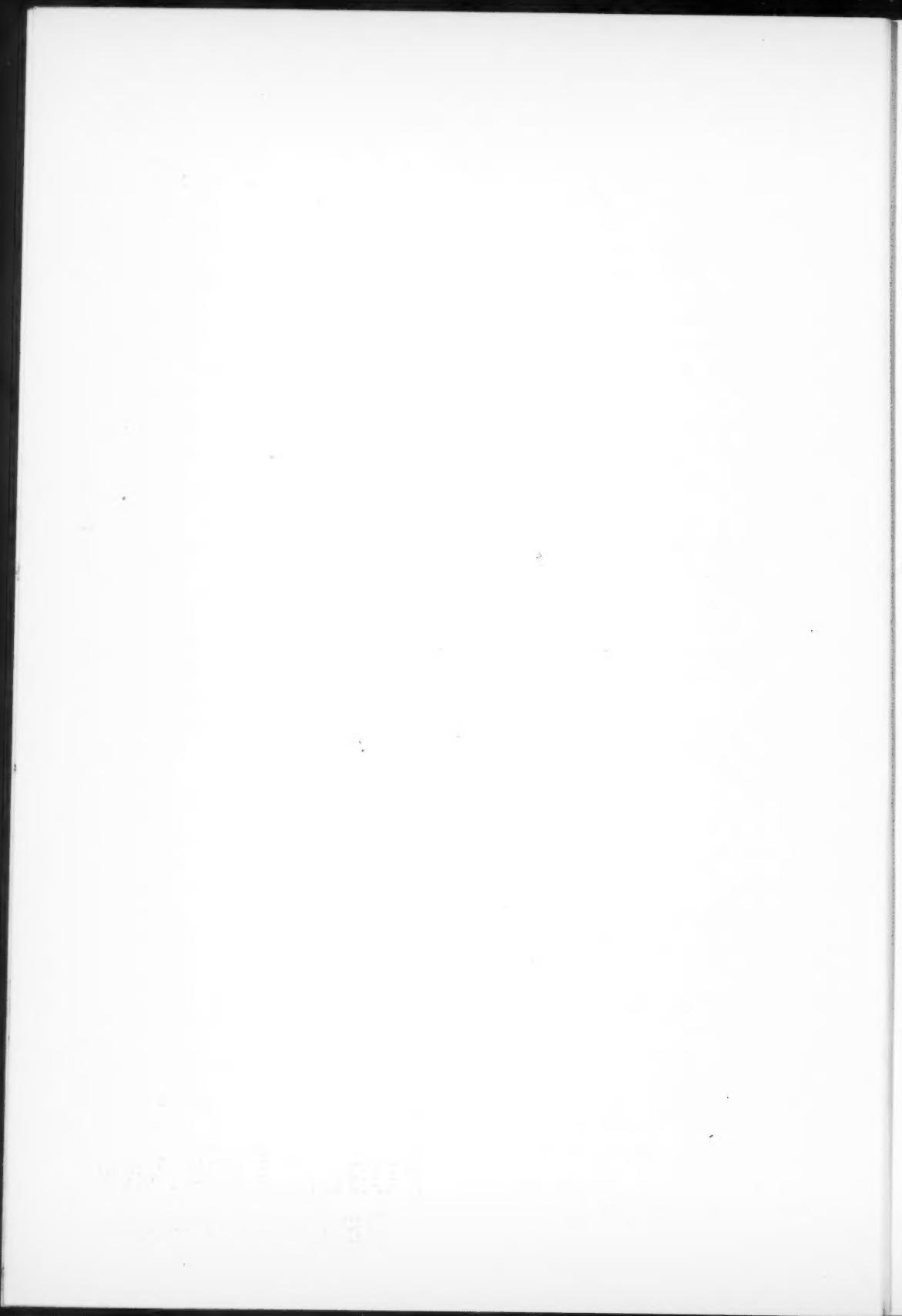
The publishers have made every effort to confine the listings to actual headquarters with a view to effecting an improvement over most buying guides. By headquarters is meant either manufacturers, direct importers or exclusive sales agents of manufacturers who do not sell direct. The BLUE BOOK also gives sources of supply for bulk and private brand soaps of all kinds, disinfectants, household insecticides, polishes, cleaners, moth preventives, etc.—products bought by jobbers or by manufacturers who want to handle a more complete line without additional plant expense. *These listings are not intended in any way as a complete directory of the soap and sanitary products industry.* Companies listed are only those specializing in selling the jobbing trade.

A new addition to the BLUE BOOK this year is the Appendix, starting on Page 129, in which are reproduced a number of reference articles which it is hoped readers will find convenient to have at hand for ready reference throughout the year.

In a work of this type it is inevitable that some imperfections will be present. If the name of your firm has been omitted or listed incorrectly, the publishers will greatly appreciate being notified.

THE PUBLISHERS

January, 1934



Catalog Section

BLUE BOOK and CATALOG
for the Soap, Insecticide, Disinfectant
and Allied Industries

for 1934

Condensed Catalogs of Firms Supplying
Raw Materials, Machinery and Equipment
to Makers of Soaps, Insecticides, Disin-
fectants and Allied Products.



Factory
West Haverstraw, N. Y.

Sales Office
180 Madison Ave., N. Y. C.

AROMATIC & SYNTHETIC CHEMICALS

**for Soaps, Perfumes, Cosmetics,
Toilet Preparations, Barber Supplies**

Some of Our Specialties

Geraniol	Benzyl Acetate
Citronellol	Benzyl Alcohol
Acetophenone	Amyl Cinnamic Aldehyde
Methyl Acetophenone	Phenylacetic Acid
Benzophenone	Ethyl Phenylacetate
Nerolin	Methyl Phenylacetate
Yara-Yara	Phenyl Ethyl Alcohol

**Address all inquiries to
Sole Selling Agents:—**

American - British Chemical Supplies, Inc.

180 Madison Avenue, New York City

Telephone Ashland 4-2265 Cable Address: Bisulphide, New York

Headquarters for

SODIUM ACETATE ANHYDROUS
NAPHTHALENE **CRESYLIC ACID**

Say you saw it in the SOAP BLUE BOOK

AERO BRAND

T · S · P

The finest quality Trisodium
Phosphate that it is possible to
produce — backed by American
Cyanamid service.



**AMERICAN CYANAMID & CHEMICAL
CORPORATION**

535 FIFTH AVENUE NEW YORK

Say you saw it in the SOAP BLUE BOOK

van Ameringen

MANUFACTURERS and IMPORTERS of
AROMATIC ESSENTIALS

which include

Perfume Specialties

We are makers of finished perfume oils, ready to use in perfume, toilet water, creams, powders, lotions, soaps and all toilet preparations. Many special oils for special purposes, such as insecticides, dentifrices, disinfectants, proprietary preparations, etc. New odors created for specific purposes, upon request.

Aromatic Chemicals

Irines, (Ionones), Geraniols, Citronellol, Amyl Cinnamic Aldehyde, Citral, Benzophenone, Rhodinol, Linalool, Methyl Cinnamate, Phenyl Ethyl Alcohol, Methyl Anthranilate, and many others. Exclusive American agents, Haarmann & Reimer, Holzminden, Germany — manufacturers of aromatic chemicals and perfume specialties.

Essential Oils

Geranium, Citronella, Lavender, Lemongrass, Lemon, Orange, Bergamot, Bois de Rose, Eucalyptus, Sandalwood and many others.

Flower Oils

Concretes, absolutes of Jasmin, Orange, Tuberose, etc., of high quality.

— Haebler, Inc.

SOAP PERFUMING demands special abilities and we have the background in that branch. A large number of soap perfumes are now available, ranging in price from \$2.00 up. *State requirements and send for samples.*

van Ameringen-Haebler, Inc.

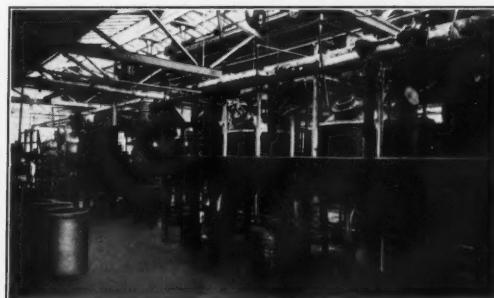
315 FOURTH AVENUE - - NEW YORK

180 North Wacker Drive
CHICAGO

438 West 48th Street
LOS ANGELES

42 Wellington Street, East
TORONTO, CANADA

*View in the
Reaction Department
of our factory at
Elizabeth, N. J.*



If Soap is a problem Armour can help you

NO matter what your problem — no matter what kind of soap you need or for what purpose you may wish to use it, Armour and Company are in position to help you.

Over 40 years' experience in making high grade soaps for all needs — an alert laboratory staff of trained soap chemists — a long time reputation for fair dealing and satisfaction — all this is behind every soap product leaving our plants.

Soaps Manufactured by Armour and Company

Auto Soaps	Mottled Soap
Castile Soaps	Oil Soap
Chip Soaps (flakes)	Scouring Powder
Cocoanut Oil Soap	Scouring Soap
Dry Cleaning Soap	Scrubbing Soap (liquid)
Greases	Shampoo Base
Laundry Soap	Shampoo Liquid
Laundry Soap (chips)	Soap Powdered (white neutral)
Laundry Soap (powdered and granulated)	Soap Powders
Liquid Soap Base	Surgical Soaps
Liquid Soap	Textile Soaps
Medicinal Soap (cake)	Toilet Soap Base
Medicinal Soap (liquid)	Toilet Soaps
	Washing Powder

If you do not find exactly the type of soap you need in the list above, just drop a short note outlining your requirements. Armour and Company maintain a complete and practical Chemical Research Department on call at all times for rendering advice and suggestions. There is no obligation whatever for this service.

INDUSTRIAL SOAP DEPARTMENT
ARMOUR AND COMPANY
1355 W. 31st STREET • CHICAGO, ILLINOIS

No Chemical Plant Is Complete Without a Compact Technical Library

And No Such Library is Complete Without These Well-known TECHNICAL BOOKS

Perfumes, Cosmetics and Soaps, by Poucher. New and revised edition of this standard reference. Volume I, a dictionary of raw materials, 394 pages, \$6.50. Volume II, dealing with the manufacture of soaps, perfumes and toilet preparations, 406 pages, \$9.00.

The American Soap Maker's Guide, by Meerbott and Stanislaus. The most recent American publication on soap manufacturing. 750 pages. \$7.50.

Textile Soaps and Oils, by Hurst & Simmons. A handbook on the preparation and properties of soaps and oils used in textile manufacturing. 212 pages. \$4.00.

Henley's Twentieth Century Book of Recipes, Formulas and Processes. A handy reference book listing 10,000 miscellaneous formulas, including special sections for soaps, polishes, insecticides, etc. 800 pages. \$4.00.

The Industrial Chemistry of Fats and Waxes, by Hilditch. A study of the fats and waxes in relation to their use in industry. 450 pages. \$6.00.

Manual of Toilet Soap Making, by Deite. Translation from a standard German text on manufacture of toilet and medicated soaps. 360 pages. \$8.00.

Art of Soapmaking, by Watt. Practical handbook on the manufacture of hard and soft soaps. 323 pages. \$4.00.

Modern Soap Perfumes, by Sedgwick. A practical handbook on the science of soap perfumery. \$1.00.

Modern Soap and Detergent Industry, by Martin. Second Edition. An outstanding contribution to the literature on soap manufacture. Thoroughly up to date work covering processes, apparatus and formulas. In two volumes—cloth binding, $6\frac{1}{2} \times 10\frac{1}{2}$. Price \$12.00 for each volume.

Pyrethrum Flowers, by Gnadinger. A complete compilation of all known facts on pyrethrum; its history, sources, evaluation, chemistry and uses. The problems involved in the manufacture of pyrethrum products are given thorough and lucid exposition. 270 pages. \$3.50.

Soaps and Proteins, Their Colloid Chemistry in Theory and Practice, by Fischer. 272 pages. \$4.00.

Soaps, by Hurst. A practical manual of soap manufacture. 440 pages. \$7.00.

A Handbook of Soap Manufacture, by Simmons and Appleton. 167 pages. \$4.00.

Soap Blue Book, A Buyer's Guide. 195 pages. \$1.00.

Vegetable Fats and Oils, by George S. Jamieson. 444 pages. An American Chemical Society Monograph. Covering classification, occurrence, properties, analytical methods, etc., of vegetable oils, fatty acid and other derivatives; also production and refining methods. \$6.50.

Chemistry of Laundry Materials, by D. N. Jackman. A new book for the laundry operator, containing valuable information on the chemistry of laundry materials. Discusses alkalies, soaps, bleaches, starches, also the newer detergents, synthetic soaps, etc. 230 pages. \$2.50.

**CHECKS MUST ACCOMPANY ALL ORDERS
NO BOOKS MAILED ON APPROVAL**

MACNAIR-DORLAND CO.

136 LIBERTY STREET

NEW YORK CITY

Say you saw it in the SOAP BLUE BOOK



Certified Disinfectants

COAL-TAR — Unadulterated high quality coal tar disinfectants, uniform, easily diluted and agreeable in odor. Do not deteriorate with age. Can supply any strength in any quantity from a pint can to a tank car. Rigid laboratory control guarantees consumer satisfaction.

PINE OIL — Prepared from pure steam-distilled pine oil. Dilute easily to form a good white emulsion which does not separate on standing. Baird's pine oil disinfectants have a germicidal strength three to five times greater than pure carbolic acid.

PESTOX Liquid Insecticide

An efficient liquid household insecticide of the pyrethrum type, pleasantly scented. Surpasses in effectiveness the standard of the National Association of Insecticide and Disinfectant Manufacturers. Each lot carefully controlled by the Peet-Grady method. Supplied in bulk for distributors to resell under their own trade-names. Also suppliers of pyrethrum concentrate.

Crude Cresylic Acid Cresol

BAIRD & McGUIRE, Inc.

HOLBROOK, MASS.



ST. LOUIS, MO.

New York City and New Jersey Representative
EASTERN STATES SUPPLY CO., 136 Liberty St., New York

Phone: WOrth 2—3143

Say you saw it in the SOAP BLUE BOOK



STAINLESS Cattle Spray

A light colored liquid for spraying cattle to rid them of annoying flies and insects. Contains the active principle of pyrethrum. Will not stain, blister or burn, and has no disagreeable odor. A popular product with farmers and dairymen. Supplied in bulk to the distributing trade only.

**Crude Carbolic Acid
Creosote Oils**

Cresol Compounds

U. S. P.—Prepared in strict accordance with the U. S. P. requirements. Phenol coefficient, $2\frac{1}{2}$ to 3. Dilutes with water to form clear transparent solutions. Used largely by the medical profession and hospitals.

TECHNICAL — Similar in composition, appearance and odor to Liquor Cresolis Comp., U. S. P., but made from refined cresylic acid as a base. Approximately twice as strong as the U. S. P. product. Clear, amber colored solutions.

BAIRD & McGUIRE, Inc.

HOLBROOK, MASS.



ST. LOUIS, MO.

New York City and New Jersey Representative

EASTERN STATES SUPPLY CO., 136 Liberty St., New York

Phone: WOrth 2—3143

Say you saw it in the SOAP BLUE BOOK

Barrett
Standard
CHEMICALS

FOR THE SOAP AND DISINFECTANT INDUSTRY

Manufactured to meet the most exacting demands for quality, uniformity and dependability. Barrett Standard Service assured with every order. 'Phone, wire or write for quotations.

CRESOL U.S.P.
META PARA CRESOL
SPECIAL CRESOLS
CRESYLIC ACIDS
TAR ACID OILS, 10%—75%
PHENOL U.S.P.
HYDROCARBON OIL
SOLVENT NAPHTHA
DIP OILS



40 Rector Street

The *Barrett* Company

New York, N. Y.

Say you saw it in the SOAP BLUE BOOK

BALTIMORE, MARYLAND
Russell Stoddard
17 S. Charles Street

CHICAGO, ILLINOIS
Even M. Tysdal
325 W. Huron Street

Our Branch Representatives
are
Experts
on
DERRIS
PYRETHRUM
Consult Them

New York

W. BENKERT & COMPANY, INC.

100 Gold St.

Get the most
kill per pound

By Using

BENKERT'S PYRETHRUM
Ground
Powder
Concentrate No. 15
Derris
Red Squill

DETROIT, MICHIGAN
R. M. Stevenson
2457 Woodward Avenue

ST. LOUIS, MISSOURI
Joseph Fahey
Cotton Belt Building

Say you saw it in the SOAP BLUE BOOK

ARE YOU LOSING AN OPPORTUNITY ON DERRIS?

DERRIS IS NEW—BUT THERE ARE PROFITS IN IT.

TRI-SODIUM PHOSPHATE

From the Florida mine to the finished material on our factory shipping platform—the product of our own organization. Clean, free-flowing crystals of uniform size and character, packed in non-sifting packages.

Stocks of Tri-sodium Phosphate are carried in the following cities:—

Carteret, N. J.

Worcester, Mass.

Philadelphia, Pa.

Fall River, Mass.

Baltimore, Md.

Providence, R. I.

Pittsburgh, Pa.

Syracuse, N. Y.

Cleveland, O.

St. Louis, Mo.

Chicago, Ill.

San Francisco, Calif.

Cincinnati, O.

Montreal, Canada

Detroit, Mich.

Toronto, Canada

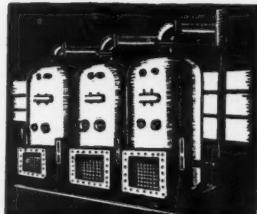
Works: Carteret, New Jersey



Bowker placer mining, Florida



Loading for Bowker factory



Vacuum Evaporators, Bowker plant



Chemical control at all times



Truck delivery to most points

BOWKER

CHEMICAL COMPANY

420 LEXINGTON AVENUE, NEW YORK

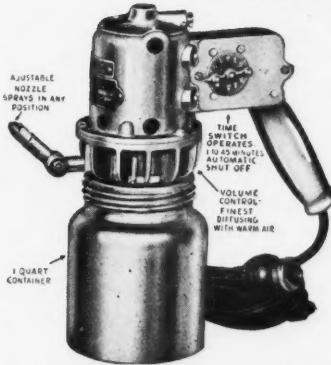
IT'S HERE!

Automatic — Safe — Trouble-free

and

Finest Controlled Atomization

With The New Breuer's TORNADO Electric Sprayer Model 54
With Automatic Time Switch (Compressor Type)

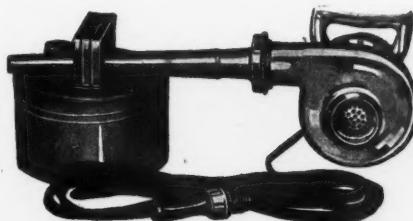


Model 54 Automatic Time Switch Sprayer. Entirely automatic, trouble free, simple and safe. Easily operated—just place in a room, set the time switch from 1 to 45 minutes and no further attention is required. Sprays desired amount of liquid and automatically shuts off. Of great advantage is the adjustable nozzle which sprays in any position and the volume control which enables the operator to spray one ounce every 2 to 4 minutes, with a fine gas formation or a larger volume if desired.

This new TORNADO Model 54 syphons the insecticide through the rotor chamber, warms it, and then thoroughly atomizes it, thus giving the very finest diffusion obtainable. There is no weakening dilution of the killing power by steam or water—sprays at full strength. Can also be used for hand spraying. $\frac{1}{8}$ H.P. G.E. Universal Motor. 1 quart metal container, 20' of rubber covered cable.

The models shown below also spray at full strength — no dilution. They are safe and trouble free and outstanding in performance.

Model 53 new Compressor Type unit with new adjustable volume control. Will break insecticide into finest mist and gas formation obtainable. Floats throughout spraying area for many minutes—a truly de luxe model! $\frac{1}{8}$ H. P. G. E. Universal Motor. 1 quart metal container. 20' of rubber covered cable.



Model 6 Fan Type unit. Will break insecticide into a very fine mist. Sprays 18 to 20 feet. $\frac{1}{8}$ H.P. G.E. Universal Motor, Norma Ball Bearings, 1 gallon metal container. This model is for larger institutions, warehouses, industrials, etc., and is also highly recommended for moth-proofing solutions.



Model 50 Fan Type unit. A fine insecticide atomizer. Sprays distance of 8 to 10 feet. $\frac{1}{8}$ H. P. G. E. Universal Motor, 1 pint glass jar, or Model 51 with 1 quart glass jar.



Write today for complete descriptions and circulars.

BREUER ELECTRIC MFG. CO.

863 Blackhawk Street

Chicago, Illinois, U. S. A.

Say you saw it in the SOAP BLUE BOOK

Synthetic Aromatic Chemicals

Compound Specialties

Essential Oils

for use in the manufacture of
SOAPs, TOILET PREPARATIONS, PERFUMES,
THEATRE SPRAYS, INSECTICIDES, ETC.

United States Representatives of
N. V. Polak & Schwarz's Essence-Fabrieken
ZAANDAM, HOLLAND

carrying a full line of their
well-known products

BUDD
Aromatic Chemical Co. Inc.

667 Washington St., New York City

Say you saw it in the SOAP BLUE BOOK

FRENCH PERFUMING SPECIALTIES

- - - - *for the Maker of Soaps,
Perfumes and Toilet Preparations*

If your product calls for originality and you want it to convey that certain "French atmosphere", we can be of assistance to you.

We manufacture a full line of Perfume Compounds for high grade perfumes, soaps, shaving creams, liquid soap and shampoos. These products are based upon actual tests of the perfume materials in soaps. (See article on Soap Perfuming—page 140). They are products of our extensive perfuming experience. We make a specialty of developing odors for those who want something a little different,—a little better. We are also headquarters for the following:

Aromatic Chemicals

ACETOPHENONE	IONONES	DIMETHYL ANTHRANILATE
LINALYL ACETATE	AMYL CINNAMIC	NATURAL
SOAP GERANIOL	ALDEHYDE	METHYL NAPHTHYL KETONE
DIPHENYL METHANE	METHYL ACETOPHENONE	AMYL and ETHYL ESTERS

Soluble Resins and Colorless Distilled Essences

BENZOIN	TOLU	CISTE	MYRRH	STYRAX N.A.
PERU	LABDANUM	OLIBANUM	ORRIS	STYRAX HONDURAS

*Special Perfume Compounds for
Deodorants, Disinfectants and Insecticides*

PH. CHALEYER, INC.
French Perfumers

200 VARICK STREET NEW YORK CITY
Telephone—WALKER 5-9828

Say you saw it in the SOAP BLUE BOOK

• CLIFTON GUARANTEED PRODUCTS •



The
DUODEK SOAPER
Chromium Plated



All Metal
TILTYPE SOAPER

Say you saw it in the SOAP BLUE BOOK

● FOAMWEL LIQUID SOAP . . .

The main characteristics of Foamwel are quick and profuse lathering in both hard or soft water. It rinses off quickly leaving hands soft and smooth. Made from pure white Cochin cocoanut oil. Aged in cypress tanks before shipping. For these reasons Foamwel is distinctly superior to ordinary liquid soap. Guaranteed to be of better quality than U. S. Bureau of Standards Specifications requirements.

● CLIFTON LIQUID SOAP CONCENTRATE

A concentrated product used for the manufacture of liquid soap by merely adding 2 to 3 times as much plain hydrant water. Colored or perfumed if it is desired. Clifton Liquid Soap Concentrate is made from the same high grade materials as Foamwel Liquid Soap but approximately 2½ times as concentrated. (Anhydrous content 42%). Saves time and labor. It is sparkling clear and stays this way in even the coldest weather.

● CLIFTON LIQUID SOAP BASE . . .

Solid form. A sparkling clear highly concentrated base made from the same basic materials as the liquid soap and concentrate. Recommended for those manufacturers who have facilities to use the solid material. Should be broken up in small pieces and dissolved in 2 or 3 times as much by weight of hot water. Add perfume and coloring if desired, then let stand for a few days after which time the liquid will become clear. Alternate method is to filter when cold.

● SEMI-CASTILE LIQUID SOAP . . .

Made from half olive oil and half cocoanut oil. Used where an extra bland and unguent soap is required. Recommended for delicate hands.

● PINE TREE DISINFECTANT . . .

A non-poisonous disinfectant deodorant and cleanser which should be mixed in water before using. It gives a snowy white emulsion (coefficient 3). Imparts the healthy pleasant tang of the pine forests.

● CRESOLENE DISINFECTANT . . .

A coal tar disinfectant made from extra selected grade of distilled tar acids. Cresolene has a refreshing carbolic odor and gives a milk-white emulsion in either soft or hard water.

● SIXCO DISINFECTANT . . .

Of the same general characteristic as Cresolene except that the coefficient is 5-6. The dilution recommended is 1 part to 100 or 120 parts of water.

● HIGH COEFFICIENT DISINFECTANT . . .

Has a coefficient of 16-18 and is made from genuine Scotch-blast furnace tar acids of which we are direct importers. Used extensively by manufacturers to fortify the lower grades of disinfectant.

● CRESOL COMPOUND U. S. P. . .

Used extensively by hospitals for sterilizing in the operating room and general disinfecting. Gives a clear solution in water in all dilutions.

● CRESOL COMPOUND—CLIFTON . . .

Technical grade, used by hospitals, also has a wide use for disinfecting cattle and cattle cars. On the approved list of the U. S. Bureau of Animal Industry.

● PINO CLEANSER . . .

For glossy surfaces. A new principal bland neutral syrup-like cleanser to be used about one or two cups to a pail of water. Leaves a glossy bright new finish on varnished woodwork, furniture and automobiles. When used on linoleum, rubber or composition floors it preserves the life, color, appearance and springiness. Cleans with a minimum of effort.

● SHINE-BRITE . . .

Of the same general characteristics as Pino Cleanser except that it has a mild perfume odor in place of the pine smell. The modern way to clean and preserve floorings is by the use of Shine-Brite. Used and recommended by the Armstrong Cork Co., Linoleum Division.

● METEOR OIL SOAP . . .

A light amber neutral potash vegetable oil soap, recommended wherever a bland soft soap is desirable—in general on all glossy surfaces. Contains 48% anhydrous contents.

● DAZZLE METAL POLISH . . .

A liquid polish for all metals. It is non-inflammable and non-settling. Polishes with minimum effort.

● RUB-NO LIQUID WAX . . .

For floors. Dries bright in 20 minutes without polishing. Does a better job than old style waxes and saves considerable labor.

● *also* Fragrantaire Blocks, Deodorette Cakes, Wall Containers, Insect Killer, Theatre Spray, U.S.P. Green Soap, Hard Auto Soap, Dazzle Silver Polish, Animal Soft Soap, Weed Killer, Prepared Liquid Wax, Fabric Cleaner, etc.

CLIFTON CHEMICAL CO., Inc.
CLIFTON BLDG., 247 FRONT ST., N. Y.

COLUMBIA

SODA ASH

CAUSTIC SODA

MODIFIED SODAS

CALCIUM CHLORIDE



THE COLUMBIA ALKALI CORPORATION

Executive Sales Offices

EMPIRE STATE BUILDING, NEW YORK

Branch Sales Offices

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OHIO

431-451 ST. CLAIR ST.
CHICAGO

CAREW TOWER
CINCINNATI

SANTA FÉ TERMINAL BLDG.
DALLAS

Plant at BARBERTON, OHIO

Say you saw it in the SOAP BLUE BOOK

SOAP MACHINERY

REBUILT - GUARANTEED

EVERY ITEM SHIPPED FROM OUR SHOPS AT NEWARK, N. J.
IS HONESTLY OVERHAULED AND GUARANTEED

- 2—Proctor and Schwartz Soap Chip Dryers: one with late type 2 roll mill.
- 8—Vertical Crutchers, 3600, 3000, 1500, 1200 lbs. capacity.
- 2—H.A. 3 roll Granite Mills, 12"x24".
- 2—H.A. 4 roll Granite Mills, 18"x24".
- 3—Day 3 roll watercooled Steel Mills.
- 1—H.A. Jumbo Plodder, 8", motor.
- 1—H.A. 6" Plodder, belt.
- 1—Rutchmann twin screw Plodder, 6".
- 5—Soap Chippers, 18", 20", 30".
- 1—2 way hand soap cutting table.
- 1—Blanchard 14-A Mill, belt.
- 2—Raymond #0000 Pulverizers.
- 2—12" Mikro Pulverizers, belt and motor.
- 20—Filter Presses, 7"x7" to 42"x42".
- 18—Horizontal Mixers, 20 gal. to 500 gal.
- 14—Dry Powder Mixers, 50 lb. to 10,000 lb.
- 12—Labelers — World, Ermold, National, Knapp, Burt makes.
- 25—Dopp steam jacketed Agitated Kettles, 40, 50, 60, 80, 100, 150, 200 gallons, with ribbon, bridge and double motion agitators.
- 1—Blanchard #9 Crusher.
- 100—Steel and Cast Iron Jacketed and Agitated Kettles, 20 gal. to 5000 gals.
- 4—Ralston and Jones Automatic Soap Presses.
- 2—Houchin Soap Foot Presses.
- 1000 ft. Ball Bearing Roller & Belt Conveyor, 12" to 22".

SPECIALS

- 5—4'x9' Cooling Rolls, complete with scrapers.
- 1—24", 1—36", 1—42" 4-cage Disintegrators, made by Holmes and Blanchard, Boston, Mass., for fine pulverization. Used widely for soap powder and powdered soap. No screens, no plugging.

SEND FOR LATEST SOAP BULLETIN

ASK US FOR ITEMS NOT LISTED

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LIQUID SHAMPOO
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Geranyl Acetate
Acetophenone
Phenyl Acetic Acid
Cinnamic Alcohol
Benzaldehyde F.F.C.
Aubepine Liquid
Benzylidene Acetone
Amyl Benzoate
Isobutyl Benzoate
Methyl Benzoate

Bromstyrol
Citral S.S.
Citrene
Citronellal
Diphenyl Oxide
Eugenol
Geraniol (Soap)
Heliotropine
Isoeugenol
Irisone Pure
Laurine (Hydroxycitronellal)

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Musk Xylool 100%
Musk Ambrette 100%
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Amyl Salicylate
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And they do it better . . . because of uni-
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Caustic—Liquid
Caustic—Flake, Ground
Caustic—Walnut Size
Bichromate
Carbonate—Calcined
Chlorate
Meta Bisulphite
Muriate
Nitrate
Permanganate
Prussiate—Red Crystals

SODAS

Caustic
Caustic Flake
Caustic Crystal
Ash
Bicarbonate
Bichromate
Bisulphite
Chlorate—Crystal
Fluoride
Bifluoride or Acid Fluoride
Meta Silicate
Nitrate
Nitrite
Perborate
Phosphate
Sal
Sheffield
Silicate
Silico Fluoride
Sulphide—Solid



Aluminum Hydrate
Ammonia
Borax
Boric Acid
Benzol
Casein

Carbon Tetrachloride
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These products can
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Natural Phenol . . . Melting Point 29° (82%)—34.5°C. (90%) . . . remarkably free from impurities, but containing some cresol.

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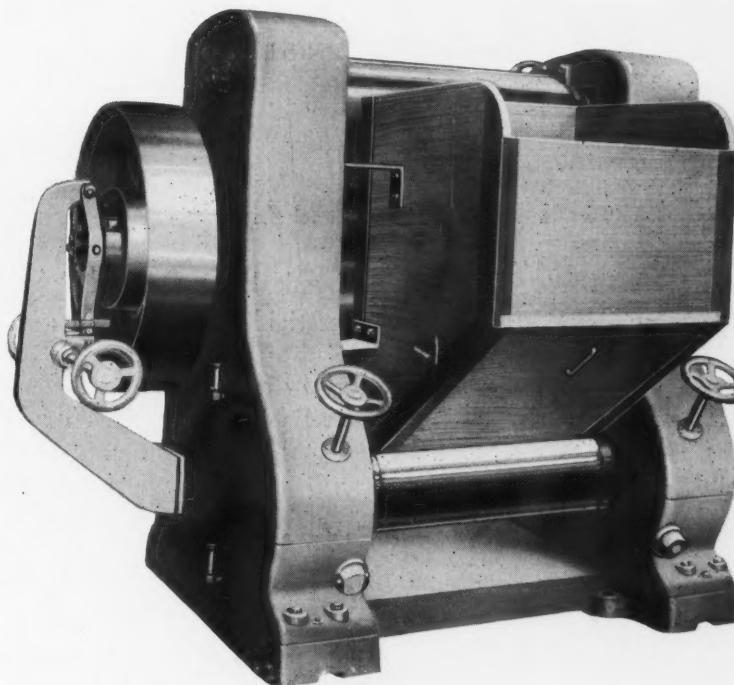
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for *Toilet Soap* and for *translucent, highly polished Soap Flakes* either of irregular or diamond shape.



Rolls of Chilled Iron of greatest obtainable hardness, all watercooled.

Heavy SKF Self-Aligning Pendulum Roller Bearings for rolls and Ball Bearings of liberal design for drive shaft.

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Types—Three, Four and Five Rolls.

Roll Sizes up to 16" Diameter and 44" Length.

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OIL CASSIA	OIL CITRONELLA	OIL THYME
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Pyrethrol 20 is available in Deo-Base, a water white petroleum distillate which has been refined to complete freedom from any kerosene odor.

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We have a complete line of Derris Products which includes Derris Powder, air separated and standardized at 4% Rotenone, and Derris Concentrated Extract standardized at 5 grs. per 100 cc plus the other extractives of Derris Root.

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Benefit by our forty-five years experience, our scientific supervision and our modern equipment when you buy whole, granulated or powdered (air-float) pyrethrum.

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For the Soap Manufacturer

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Oil Soluble

Do you need a stable coloring matter for your soap? Is your present coloring matter giving complete satisfaction?

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Merck Methyl Salicylate gives the fragrance of wintergreen to fly sprays, insecticides, polishes, soaps, pastes and other products requiring an aromatic.

Merck Methyl Salicylate is manufactured on a large scale and meets U. S. P. requirements. It is practically 100% pure synthetic oil of wintergreen.

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Merck Ether is recommended where a high grade product is required as a solvent for waxes, fats, oils, perfumes, gums and in the manufacture of intermediates, dyes, colloidion, artificial silk, and pyroxylin products.

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Carbon Bisulphide
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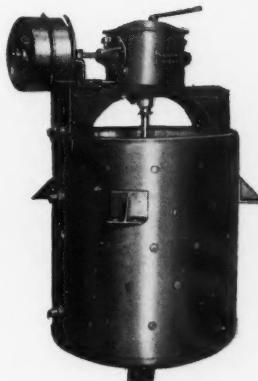


Say you saw it in the SOAP BLUE BOOK

SOAP MACHINERY

New and Used Special Offerings

New Soap Crutchers



Here are illustrations of two of Newman's brand new all steel, steam jacketed SOAP CRUTCHERS. The CRUTCHER on the left can be used to crutch ANY kind of soap. The CRUTCHER on the right can also be used to crutch any kind of soap but is especially adapted for Crutching laundry soap. These are made in a complete range of sizes. Investigate our equipment and prices before placing your next crutcher order.



Used Specials

USED EQUIPMENT

H-A 1500, 3000, 5000 lbs. capacity. Steam Jacketed Crutchers.
Dopp Steam Jacketed Crutchers. 1000, 1200, 1500 lbs. and 800 gals. capacity.
Jones Automatic Soap Presses
Ralston Automatic Soap Presses.
Scouring Soap Presses.
Empire State, Dopp & Crosby Foot Presses.
2, 3, 4, 5 and 6 roll Granite Toilet Soap Mills.
H-A 4 and 5 roll Steel Mills.
H-A Automatic and Hand-Power slabbers.

USED EQUIPMENT

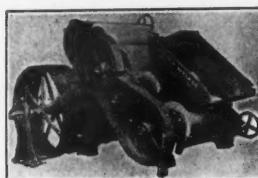
Sperry Cast Iron Square Filter Presses, 10, 12, 18, 24, 30 and 36 inch.
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Day Grinding and Sifting Machinery.
Schultz-O'Neill Mills.
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Gardiner Sifter and Mixer.
Proctor & Schwartz large roll Soap Chip Dryers complete.

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Proctor & Schwartz Bar Soap Dryers.
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H-A 6, 8 and 10 inch Single Screw Plodders.
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Filling and Weighing Machines for Flakes, Powders, etc.
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NEWMAN TALLOW & SOAP MACHINERY CO.
1051 WEST 35th ST.

CHICAGO, ILL.

Our Forty Years of Soap Experience Can Help Solve Your Soap Problems

Say you saw it in the SOAP BLUE BOOK

Niagara

CAUSTIC SODA

LIQUID, FLAKE or SOLID

You can tell it's unusually pure—because it is so *white*.



Niagara Alkali supplies liquid Caustic Soda of standard strength, 48° to 50° Baumé. This represents about 48 to 48.75 per cent of sodium hydroxide in the solution. It is shipped in tank cars of 8,000 gallons, averaging about 100,000 pounds of soda liquor, equivalent to approximately 46,000 pounds solid 76% soda; and in 10,000 gallon cars containing about 125,000 pounds of soda liquor, equivalent to approximately 58,000 pounds solid 76% soda.

Niagara

CAUSTIC POTASH

LIQUID, FLAKE or SOLID

The first made in this country! Our experience in producing this difficult chemical is valuable to *you*.

Niagara

PARA

(unadulterated paradichlorobenzene)



Fine, white, uniform crystals, in any size or type of container you prefer. Or in bead form—our new Pearlpara—the same pure quality.

NIAGARA ALKALI COMPANY

9 East 41st Street, New York, N. Y.

Plant: NIAGARA FALLS, NEW YORK

Affiliated with Electro Bleaching Gas Company,
Pioneer Manufacturer of Liquid Chlorine.

Say you saw it in the SOAP BLUE BOOK

WE SPECIALIZE IN INSECTICIDES
AND SUPPLY THE MANUFACTURING TRADE WITH
PYRETHRUM FLOWERS AND
POWDER

Dalmatian Closed, Half Closed and Open. Japanese as Imported
 Fine Powder for Dusting or Blowing—Coarse Powder for Percolation
 DOUBLY TESTED FOR THEIR PYRETHRIN CONTENT
 AND FOR THEIR KILLING POWER

PYREFUME A Concentrated Extract of Tested Pyrethrum Flowers. Requires no machinery or apparatus. Just mix, perfume and stir.
 I to 30 STABILIZED AGAINST PYRETHRINS DETERIORATION.
 Convenient, economical. When diluted, 1 part with 29 parts of petroleum distillate, it makes a spray of standard strength—viz.: 1 lb. of flowers to the gallon. Tested for its efficacy. Sold throughout the United States without one complaint.

FOLIAFUME A Concentrated Spray for Foliage. Contains Pyrethrum Ext. and Cube or Derris Ext. with a definite Rotenone content.
 NON-POISONOUS

Write for Circular and Report of tests by independent authorities. For Lawn, Garden, Vineyard and Orchard use. 1 oz. makes 3 to 6 gallons of spray.

ROtenone The active principle of Derris and Cubé Roots. WE ARE MANUFACTURING THIS COMMERCIALLY, in our own laboratories.

A valuable adjunct to Pyrethrum for general insecticide use.

ROtenone BASES AND COMBINATIONS
 FOR AGRICULTURAL AND HORTICULTURAL USE

Derris Root, Whole and Powdered, Solid Extract, Powdered Extract and Liquid Extract
 Moth Proofing Solution, containing 1% Rotenone
 Ant-Roach Powder, containing 1% Rotenone
 Flea Powder, containing 1% Rotenone

We supply these Rotenone combinations to dealers only and cheerfully supply information for their direct manufacture, to those equipped for this purpose.

RODINE A Concentrated Non-Poisonous Liquid Red Squill. Tested, Permanent, Stable, Effective Rat Killer.

ALL OUR PRODUCTS ARE VERY PROFITABLE FOR REPACKAGING
 WRITE FOR CIRCULARS AND DESCRIPTIVE MATTER

S. B. PENICK & COMPANY
 132 NASSAU ST.
 NEW YORK, N. Y.

Say you saw it in the SOAP BLUE BOOK

NAMES

MAKE REPUTATIONS

Colgate-Palmolive-Peet Company (all plants); Proctor & Gamble Company (all plants); Lever Brothers Co. (all plants); California Soap Company; Iowa Soap Company; James S. Kirk & Co.; The Climalene Co.; Scottish Co-op. Wholesale Society; N. K. Fairbanks Company; Citrus Soap Company; I. Rokeach & Sons, Inc.; Oakite Products, Inc.; Drackett Chemical Co.; William Waltke & Company; Swift & Company; Kendall Products Company.

THESE NAMES represent companies who are not only the outstanding leaders in the soap field but without exception users of Pneumatic equipment. Their unanimous preference for Pneumatic machinery is responsible for the reputation it enjoys as a superior type of automatic packaging equipment for use in the soap industry.

PNEUMATIC SCALE CORP. LTD.

79 NEWPORT AVENUE, QUINCY, MASS. (NORFOLK DOWNS STATION)

Branch Offices in New York, 117 Liberty Street; Chicago, 360 North Michigan Avenue; San Francisco, 320 Market Street
Melbourne, Victoria; Sydney, N. S. W. and Trafalgar House, No. 12 Whitehall, London, England

POWCO

BRAND

REG. U.S. PAT. OFF

Pyrethrum Products

Where quality standards prevail (and we mean real standards) POWCO BRAND Pyrethrum Products quickly show the real economy in their use.

This high quality is not an accident—it is there because of our selfish wish to keep our customers and because we feel that when you buy something, you are entitled to receive just what you buy.

Our facilities for the procurement, handling and manufacturing of POWCO Pyrethrum Products are not excelled by anyone in the Pyrethrum business anywhere.

We wish only the opportunity to demonstrate by fair means that POWCO quality is all that we say it is.

"Killing Power — That's the Thing"

JOHN POWELL & CO., Inc.

Specialists in Pyrethrum Products

114 E. 32nd Street New York, N. Y.

Say you saw it in the SOAP BLUE BOOK

POWCO

LABORATORY CONTROLLED

BRAND

REG. U.S. PAT. OFF

Tested
Persian
Quince Seed

It is important to know the country of origin of the Quince Seed you buy. Not because this is your primary basis upon which to purchase seed intelligently, for naturally the only thing that counts is the color, quantity and quality of the mucilaginous content. But it helps in determining the true value of the seed, to know its true source of origin.

We have prepared small sample lots of false Persian, Cape, Spanish, Russian and Indian seed. They will provide you with a quick, easy way to accurately identify seed offered you.

Compare these check samples with our TESTED PERSIAN QUINCE SEED. Look for freedom from dirt, mould and insect infestation. Then check,—through the simple but efficient test procedure we offer you—for mucilaginous content, that is, color, quantity and freedom from mould.

You will find POWCO TESTED PERSIAN QUINCE SEED not only the best, but the most economical on this, the true basis of quince seed value.

Neutral Powdered Soaps

We specialize in the production of Neutral Powdered Soaps primarily for use in dentifrices and toilet preparations.

With the requirements of these types of products in mind Powco Brand Soaps are manufactured from refined edible oils; have no free caustic or free alkali; have a decidedly low moisture content, and are LABORATORY CONTROLLED.

Concentrated Shaving Cream Base

This product is a creation of our Chief Soap Chemist, and affords a medium for manufacturing a quality finished shaving cream, most expeditiously and most economically.

REMOVES ALL
UNCERTAINTY
FROM SHAV-
ING CREAM
MANU-
FAC-
TURE

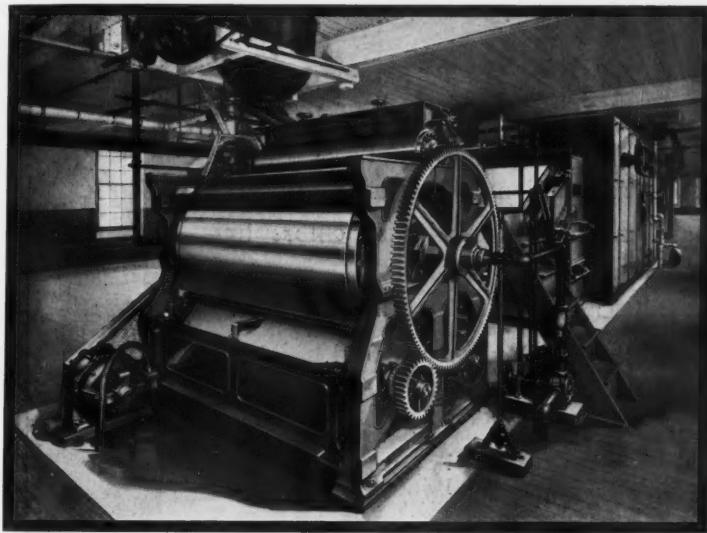
Send for Samples
and Compare

JOHN POWELL & CO., Inc.

114 East 32nd Street :: :: New York, N. Y.

Say you saw it in the SOAP BLUE BOOK

PRODUCING THE PERFECT CHIP FOR ALL SOAP MAKING NEEDS



New Type Proctor
Chip Soap System pro-
ducing extremely thin
chips of textile soap in
new plant of Original
Bradford Soap Co.,
River Point, R. I.

● The New Proctor Chip Soap System produces the thinnest of chips . . . chips perfectly formed in long ribbons, evenly thin from edge to edge, uniformly dried free from hard overdried particles or underdried spots. These chips make cleaner, whiter, quicker-dissolving laundry flakes. They make smooth-surfaced, clear-colored toilet cakes. They give quicker, better milling and plodding. They give quicker, easier grinding into powdered soaps . . . with less loss in dust. New high speed chilling roll . . . spray-cooled, pump-drained, precision-ground, smooth-surfaced. New drying machine . . . with revolutionary improvements in principal details of design . . . more efficient, more economical, cleaner in operation. Write for new descriptive bulletin No. 72, gladly sent free on request.

PROCTOR & SCHWARTZ • INC •
• PHILADELPHIA •

Say you saw it in the SOAP BLUE BOOK

PYLAM CHLORO GREEN S-310

a water-soluble coal-tar chlorophyl shade that can be used for coloring all soap products; originated by us in 1928; used all over the world.

PYLAKLOR 52 PASTE

a coal-tar substitute for oil soluble chlorophyl. For boiled auto and boil-off soaps; creams, lotions, oils, waxes, polishes and pastes.

Faster and more economical than chlorophyl.

Do You Color Your Products ?

These pure colors will serve you well.

They will color practically anything you can make.

WATER-SOLUBLE

Pylam Chloro Green
Pylam Rhodamine B Extra
Pylam Fluorescene (Opal)
Pylam Metanil Yellow
Pylam Fast Yellow
Pylam Heliotrope
Pylam Chloro Violet
Pyla-Nap Green (Leaf Green)
Pylam Mint Green
Pylam Amber
Pylam Orange

OIL SOLUBLE

Pylakrome Black 319
Pylakrome Black 77
Pylakrome Pink
Pylakrome Red
Pylakrome Scarlet
Pylakrome Green
Pylakrome Brill. Green
Pylakrome Yellow
Pylakrome Orange
Pylakrome Amber
Pylakrome Orange

SPECIAL FOR MEDICATED SOAPS

Pylam Red S-364 water sol.
Pylam Creso Red 55 sol. in
cresylic acid.

For \$1.00 we will send one ounce of each of the water- or oil-soluble colors. Both types for \$2.00. This covers the packaging and mailing costs. Any single sample, free.

PYLAM PRODUCTS COMPANY, INC.

Manufacturing Chemists, Exporters, Importers

799 GREENWICH STREET

NEW YORK CITY

Cable Address: PYLAMCO

Say you saw it in the SOAP BLUE BOOK

SARGENT ... Presents a *NEW* Soap Chilling Roll and Drying Machine

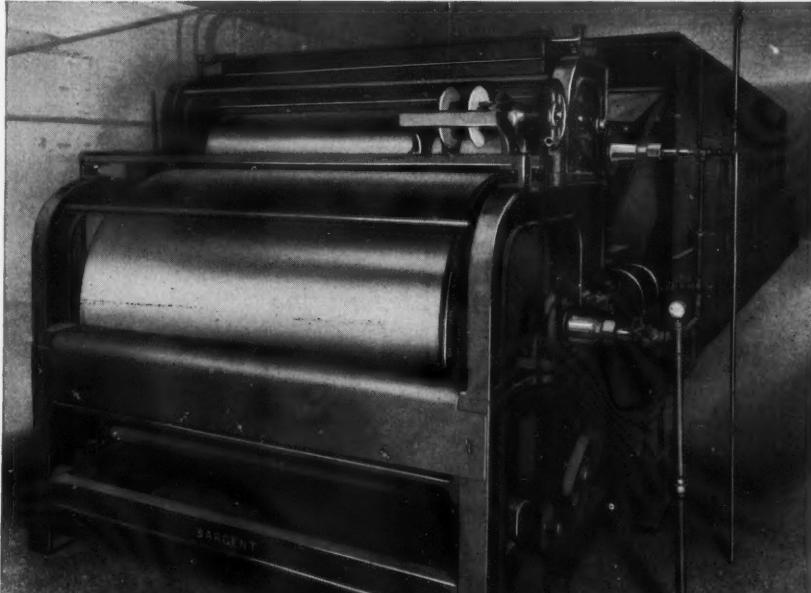
AS the title indicates, the Rolls are **NEW** and the entire machine is **NEW**, many valuable improvements having been perfected until this latest Sargent development is now one of the very finest Rolls obtainable.

To the soap manufacturer, the most important angle is to have a *thin, uniform chip* . . . readily accomplished by these new Rolls being expertly machined, ground and set. Finest grade of cast iron. Vari-speed

controls on both Rolls insures easy adjustment . . . every part accessible.

Drive improvements reduce the horsepower used. Changes made at a minute's notice. The Dryer is entirely re-designed. Its housing gives better insulation and cuts down steam consumption per hour. Other valuable changes have been made in the circulating and exhaust air systems . . . and all fans are *direct motor driven*.

All the features stated above assure increased production and uniform quality!



C. G. SARGENT'S SONS CORP. GRANITEVILLE
MASS., U. S. A.

SMITH-WEIHMAN CO., Inc.

25 years experience importing

GENUINE UNADULTERATED COMMERCIAL OLIVE OIL

PRIME GREEN SULPHUR OLIVE OIL (OLIVE OIL FOOTS)

COCOANUT OIL

*for delivery in tank cars,
tank wagons, barrels and drums*

Selling Agents for

The M. Werk Co., Cincinnati, Ohio

STEARIC ACID

OLEIC ACID (Red Oil)

INTERNATIONAL COMMERCE BLDG.

15 MOORE STREET NEW YORK, N. Y.

BOWLING GREEN 9-9174 - 9175 - 9176

Say you saw it in the SOAP BLUE BOOK

Don't buy on Price!

When you buy insecticides, disinfectants, soaps and other sanitary products and accessories you expect them to accomplish certain results. If they are inferior products, they are expensive to use at any price. Poorly made goods may even damage property in addition to failing in their task.

Buy only from reputable suppliers. Scrutinize the quality of what you buy even more closely than the price. A manufacturer of honest merchandise cannot meet cut throat competition. Pay a fair price for your sanitary products and you will get real satisfaction. Results count! Inferior merchandise cannot produce the results you want.

NATIONAL ASSOCIATION OF
INSECTICIDE & DISINFECTANT MFRS.

Chrysler Building

New York

Say you saw it in the SOAP BLUE BOOK



SOLVAY

TRADE MARK REG. U. S. PAT. OFF.

SODA ASH

Dense - Light - Extra Light

Representing the highest grade of this product produced commercially today is Solvay 58% Soda Ash.

Its uniformity is your best guarantee of maintaining standard operating schedules.

CAUSTIC SODA

Solid - Flake - Liquid - Ground - Powdered

The high standard of quality which The Solvay Process Company has established in the alkali field is well exemplified in Solvay Caustic Soda—made from soda ash manufactured by the Solvay process.

For the convenience of the consumer, Solvay Caustic Soda is delivered in the five forms listed above.

Where manufacturers are equipped to handle and store the liquid form, handling costs can be proportionately reduced and convenience greatly facilitated. For full information, send for the

Solvay Book on Liquid Caustic Soda

This latest authoritative publication gives all necessary practical information regarding the unloading and handling of this highly advantageous product.

CAUSTIC POTASH

A strong potassium alkali, marketed in liquid form and containing 45-49% potassium hydroxide. Solvay Caustic Potash typifies the excellence which has made Solvay Products the outstanding choice of the soap field.

SOLVAY SALES CORPORATION

*Alkalies and Chemical Products Manufactured by
The Solvay Process Company*

61 BROADWAY

NEW YORK

Boston Syracuse Chicago Indianapolis Cleveland Cincinnati
Pittsburgh Detroit Philadelphia Kansas City St. Louis

Say you saw it in the SOAP BLUE BOOK

PRODUCTS



FOR YOUR PRIVATE LABEL

Put Solvay quality into your packages and get more profits out of your private label trade. Solvay produces a wide variety of highest quality alkalies which are especially adapted to the needs of repackers. Write today for full information and prices. Ask for booklet SBB.

SOLVAY SNOWFLAKE CRYSTALS

(*Trade Mark Reg.*)

Pure white, crystalline, immediately and entirely soluble, always free running, Solvay Snowflake Crystals is an excellent water softener and effective soap saver. Perfect solubility enables this mild cleanser to do its work without leaving a residue. Snowflake Crystals also makes the most perfect base for bath salts.

SOLVAY FLUF (Trade Mark Reg.)

Fluf makes an ideal cleanser to add to your line of products because it produces the largest package with the lightest weight. Fluf is an extra light soda ash made especially fluffy, bulky and light by a process exclusive with Solvay.

SPECIAL CLEANSERS

—mixtures of basic materials used in all general cleansing. Solvay manufactures a complete line of these cleansers, covering every cleansing need which can be filled by the use of milder types of alkali. Special booklets describing these products can be obtained from any office of the Solvay Sales Corporation.

SPECIAL ALKALIES

Solvay Special Alkalies are specially prepared mixtures of a stronger type than the Special Cleansers. These alkalies are well adapted to the heavy duty type of cleaning. Full information will be supplied promptly upon request.

DETERGENT

Detergent of special grades adapted to various kinds of scouring, is another Solvay line which is providing profitable business opportunities in private label trade. Another field in which Solvay quality enables you to beat competition! Full information upon request.

PARA-DICHLORBENZENE

In Fine — Medium — Coarse Crystals

Especially well adapted to block manufacture. Solvay Para-dichlorobenzene is supplied in carefully graded crystal form, insuring perfect blending with colors and perfumes. A product of exceptional purity. Delivered in a selection of packages wide enough to meet all marketing needs. Write today for prices and full information.

SOLVAY SALES CORPORATION

*Alkalies and Chemical Products Manufactured by
The Solvay Process Company*

61 BROADWAY

NEW YORK

Boston Syracuse Chicago Indianapolis Cleveland Cincinnati
Pittsburgh Detroit Philadelphia Kansas City St. Louis

Say you saw it in the SOAP BLUE BOOK

Sonneborn Specialties-

DEO-BASE

Petroleum oil refined to complete freedom from kerosene odor.
Base for household and industrial insecticide sprays and liquids.
Base for odorless cattle spray.

WHITE OILS

All types and grades for the manufacture of creams and cosmetics, pharmaceuticals, auto and furniture polishes, etc. USP Heavy, USP Light and also Technical grades.

PETROLATUMS

Daugherty Brand (all USP grades) for cosmetic, pharmaceutical and industrial purposes. All Yellow and White grades in all consistencies.

SONO-JELL

Base for liquefying cleansing creams, pomades, ointments, hair preparations, etc.

TRI-OL

Base for soapless oil shampoos.

Write us for further information regarding these products.

L. SONNEBORN SONS, Inc.

Refiners of White Oils and Petrolatums

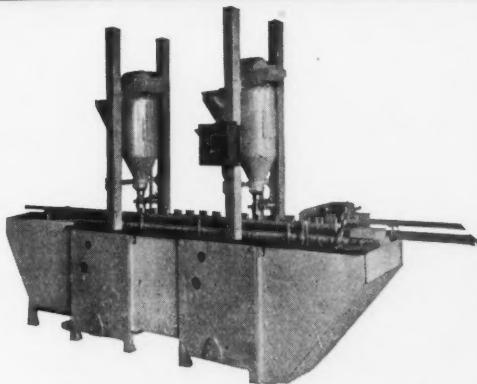
New York Office
88 Lexington Avenue

Refineries
{ Petrolia, Pa.
Franklin, Pa.

Chicago Office
820 Tower Court

Say you saw it in the SOAP BLUE BOOK

Filling and Packaging Equipment



New double-unit, fully automatic Filling Machine

When you need a single machine or a complete packaging line, S & S have the time-tested answer to every one of your problems.



STOKES & SMITH Filling and Packaging Machinery is being used to fill and package 126 different materials. Stokes & Smith Engineers have solved the packaging, production and equipment problems of a list of manufacturers that read like a "Who's Who" of American Industry.

It will pay you to investigate the complete service and broad experience offered by Stokes & Smith. Write for literature.

SLS Filling Machines

SLS Bag & Envelope Sealers

SLS Carton Fillers & Sealers

SLS Carton Top & Bottom Sealers

SLS Gross & Net Weight Scales

SLS Tight-Wrapping Machines

STOKES & SMITH CO.

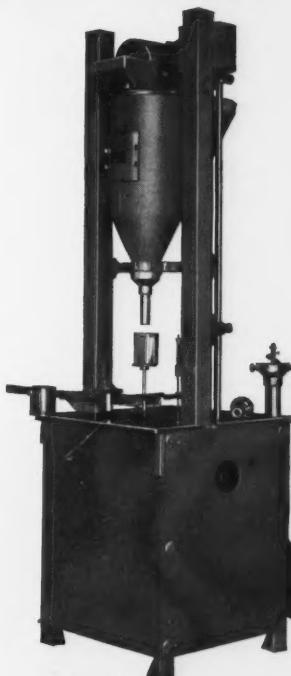
PACKAGING MACHINERY • BOX MAKING MACHINERY

4915 Summerdale Ave., Philadelphia, U. S. A.

British Office: 23, Goswell Road, London, E. C. 1



Universal Filling Machine



For economy and success, send your packaging problems to S. & S.

Say you saw it in the SOAP BLUE BOOK

SWANN

T. S. P.

CRYSTALLINE OR GLOBULAR

Free Flowing Uniform Readily Soluble

YOU can always depend upon the purity, uniformity and quality of Swann Tri-Sodium Phosphate for it is produced under the closest chemical control from Swann Phosphoric Acid which is made by the exclusive Swann electric furnace method.

Available in fine, medium and coarse crystals or in globular (Globo) form, Swann T. S. P. is Free Flowing and readily soluble. A trial order will convince you that it is the finest T. S. P. that can be produced.



Packed in
100 pound metal drums
(friction plug top)
125 pound
paper lined kegs
200 pound
paper lined bags
325 pound
paper lined barrels
Also supplied in
special size packages and
bulk in car load lots



SWANN
CHEMICAL
COMPANY
BIRMINGHAM

Division of THE SWANN CORPORATION

District Offices: CHARLOTTE DALLAS CLEVELAND SAINT LOUIS NEW YORK

Say you saw it in the SOAP BLUE BOOK

SOAPMAKERS OILS

and

Aromatic Chemicals

We have always been recognized as headquarters for the finest quality soap perfumery oils and synthetic aromatic chemicals. We offer these products at competitive figures and are prepared to make immediate shipments—of a pound or a ton.

ESSENTIAL OILS

Oil Anise	Oil Citronella, Ceylon
Oil Bay	Oil Cloves
Oil Bergamot	Oil Eucalyptus
Oil Bois de Rose	Oil Geranium, African
Oil Camphor, White	Oil Geranium, Bourbon
Oil Camphor, Sassafrassy	Oil Kananga, Java
Oil Cassia, Redistilled	Oil Lavender, Fleurs
Oil Cedarleaf	Oil Lemon, Italian
Oil Cedarwood	Oil Lemongrass
Oil Citronella, Java	Oil Linaloe, Mexican
Oil Orange, Sweet, Italian	Oil Sassafras, Art.
Oil Patchouly	Oil Sassafras, Natural
Oil Pennyroyal	Oil Spearmint
Oil Peppermint	Oil Spike Lavender
Oil Petitgrain	Oil Thyme Red
Oil Pimento Berries	Oil Thyme White
Oil Pineneedles, Siberian	Oil Vetivert, Bourbon
Oil Rosemary	Oil Wormseed
Oil Sandalwood, W. I.	Oil Ylang Ylang, Bourbon
	Oil Ylang Ylang, Madagascar

AROMATIC CHEMICALS

For our offerings of these products, refer to advertisement facing the inside front cover.

UNGERER & CO.

13-15 West 20th Street

NEW YORK

Say you saw it in the SOAP BLUE BOOK



We Are PRIME FACTORS of

Oils for
INSECTICIDES
LIQUID SOAPS
TOILET SOAPS
and SPRAYS

For Insecticides use our - - - - -

A-#32
A-#31

For Liquid & Toilet Soaps use - - - -

A-#40
Rose Cardinal
Violet #51
Rose K. #2

For Sprays use our - - - - -

A-#39
A-#45
A-#47
A-#52

When in need of Special Perfume Oils consult our Laboratories which
are at your disposal.

Samples and Quotations on request.

VAN DYK & COMPANY, INC.

57 Wilkinson Avenue

Jersey City, N. J.

Say you saw it in the SOAP BLUE BOOK



T. S. P. FACTS

Tri-Sodium Phosphate, because of its emulsifying and detergent properties, is one of the best all-purpose cleaning compounds known. It can be used in much smaller quantities than other cleansers and without the application of high temperatures. It is easily rinsed from hard surfaces and fabrics. Noted, too, for its remarkable water softening properties.

• There are plenty of good baseball pitchers . . . there are scores of good chemicals on the market today. But it takes that extra "something on the ball" to make a consistent winner . . . to assure the day-after-day superlative quality of Victor T. S. P.

Here is a brilliant white, free-flowing material of uniformly high quality. Because of its superior mechanical condition—due to a special ageing process—caking problems are reduced to a minimum with Victor Tri-Sodium Phosphate. Its uniform purity also makes possible a product that is immediately and completely soluble. No waste of time or material. Available in four grades: chip, flake, fine and powdered . . . carefully screened and sized.

VICTOR CHEMICAL WORKS : : CHICAGO, ILL.
141 W. Jackson Blvd.

Say you saw it in the SOAP BLUE BOOK

The advantages of 50 years'

EXPERIENCE

are constantly available to customers of this House.

SODIUM PHOSPHATES

Warner

MONO-, DI-, TRI-,

Warner Mono-Sodium Phosphate—
Much of the reputation of the House of Warner has been built upon this product. It has been a Standard of Quality in the Food Products, Medicinal and Pharmaceutical trades for many years.

Warner Di-Sodium Phosphate—Enjoys the highest reputation for dependable uniformity in the Textile, Paint, Leather and other fields.

Warner Tri-Sodium Phosphate—Fine Quality and Uniform performance are assured. It meets the varied needs of the customer in either physical properties or chemical content. To those users of this product for water treating, etc., Warner has much information of value looking toward a reduction in operating costs.

ADDITIONAL
WARNER QUALITY
PRODUCTS

Acid Phosphoric
Aluminum Hydrate
Barium Peroxide
Blanc Fixe
Carbon Bisulphide
Carbon Tetrachloride
Chlorine, *Liquid*
Soda Caustic, *Liquid*
Soda Caustic, *Solid*
Sodium Hypochlorite
Solution
Sodium Sulphide
Sulphur Chloride
Yellow and Red
Water Treating
Compounds

The wide variety of uses to which the Sodium Phosphates are put makes imperative the selection of a Brand that assures **Highest Quality, Uniformity and Production under the best manufacturing practice.**

An opportunity to submit samples and quotations is solicited.

WARNER

CHEMICAL COMPANY

Pioneer Producers 1886

CHRYSLER BUILDING • NEW YORK CITY
155 EAST SUPERIOR STREET • CHICAGO
70 RICKARD STREET • SAN FRANCISCO

EXCLUSIVE SALES AGENTS FOR WESTVACO CHLORINE PRODUCTS, INC.

WILBUR-ELLIS AND REDDING, Inc.

17 BATTERY PLACE NEW YORK CITY, U. S. A.
CABLES REDOL—NEW YORK

BOARD OF TRADE BUILDING
CHICAGO, ILL.

Brokers & Commission Agents

VEGETABLE OILS

FISH AND WHALE OILS

FATS AND HYDROGENATED OILS

OIL SEEDS

OIL CAKE

FISHMEAL

IMPORT AND EXPORT

CORRESPONDENTS

WILBUR-ELLIS COMPANY, INC.

San Francisco—340 California Street
Los Angeles—So. Anderson Street
Seattle—Central Building
Manila—Philippine Islands
Wilbur-Ellis Co. of Canada, Ltd.
Vancouver, B. C.

Say you saw it in the SOAP BLUE BOOK

If You Sell

**Raw Materials, Machinery, Equipment or Finished Products
to Manufacturers of Soaps, Disinfectants, Insecticides, etc.,
You Should File Your Condensed Catalog Annually in the**

SOAP BLUE BOOK

The average supply house publishes a price list or catalog once a year or in some cases every few months, going to considerable expense to place before possible buyers full details on materials, containers or equipment offered. These catalogs fill an important need, but it is obvious that they have limitations. The buyer cannot keep a complete file of the catalogs of several hundred possible suppliers, so most of them eventually find their way to the waste basket.

A far more efficient way of keeping your catalog before the potential buyer is to file it in condensed form, along with those of other supply houses, in a single volume which will be kept in constant use. This method, more efficient for the seller, is also preferred by the buyer because he can secure information by consulting one book rather than fifty. The SOAP BLUE BOOK is kept in constant use. Besides serving as a complete and efficient buyer's guide, it contains other essential information to which the user must constantly refer.

Your catalog will regularly be brought to the attention of potential buyers if it is filed in the SOAP BLUE BOOK.

Published by

McNair Dorland Company

136 LIBERTY STREET

NEW YORK CITY

Say you saw it in the SOAP BLUE BOOK

Facts About The **SOAP BLUE BOOK**

Circulation—One copy to each SOAP subscriber manufacturing soaps of all kinds, disinfectants, cleansers, polishes, household insecticides, deodorants and related products. **TOTAL PRINTING**—2000 copies. These companies make over sixty individual types of products, including liquids, semi-liquids, pastes, powders, flakes, cakes, etc. They are marketed in small packages at retail, and in bulk to institutions, office buildings, factories, hospitals, etc.

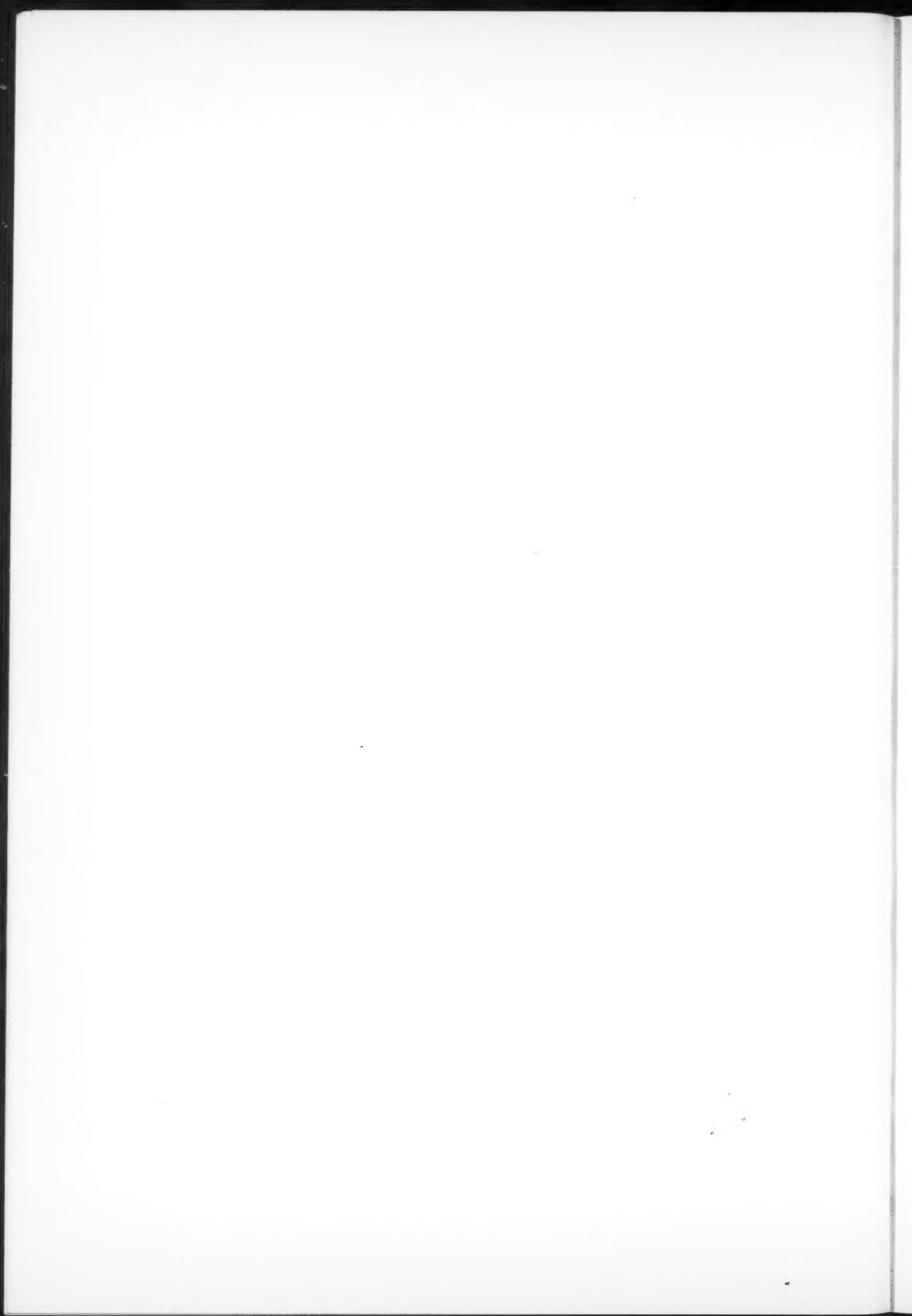
Advertising Rates—

1 page	\$ 50.00	4 page inserts	125.00
2 pages	80.00	Inside front cover or page opposite	100.00
3 pages	100.00	Inside back cover or	
2 page inserts	80.00	page opposite	75.00

Listings—No charge, the only requirement being that companies must be headquarters for items under which they are listed. Advertisers are listed in black type and each listing refers the reader to the page on which the advertisers's catalog announcement appears.

Why You Should Advertise in the SOAP BLUE BOOK

—The Blue Book is the only buying directory for manufacturers and jobbers of soaps, cleaning compounds, household insecticides, disinfectants, polishes, cleansers, deodorants, sanitary accessories, etc. . . . The Blue Book is helpful in locating new buyers as it is the chief source of information for consumers unfamiliar with sources of supply . . . Each new company subscribing during the year immediately receives a copy of the Blue Book. . . Blue Books are on file in American Consulates throughout the world to assist foreign buyers in locating accredited American sources of supply.



Buyers' Guide Section

•
BLUE BOOK and CATALOG
for the Soap, Insecticide, Disinfectant
and Allied Industries

for 1934

•

A buying directory showing sources of supply for raw materials, machinery, equipment, etc. used by manufacturers of soaps, disinfectants, insecticides and allied products.

ABRASIVES, see PUMICE STONE, SILICA, ETC.**ACETONE***(see also Dealers)*

Carbide & Carbon Chemicals Corp.,
30 E. 42nd St., N.Y.
Cleveland Cliffs Iron Co., Union Trust Bldg.,
Cleveland
Commercial Solvents Corp., 17 E. 42nd St., N.Y.
Wm. S. Gray & Co., 342 Madison Ave., N.Y.
R. W. Greeff & Co., 10 E. 40th St., N.Y.
U. S. Industrial Chem. Co., 60 E. 42nd St.,
N.Y.

ACIDS (Sulfuric, Muriatic, Nitric, Acetic, Etc.)
(see also Dealers)

American Cyanamid & Chem. Corp.,
535 - 5th Ave., N.Y. See page 11.
E. I. Du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
General Chemical Co., 40 Rector St., N.Y. See page 32.
Grasselli Chemical Co., 1300 Guardian Bdg.,
Cleveland See page 34
Hooker Electrochemical Co., 60 E. 42nd St.,
N.Y. See page 35
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.
Monsanto Chemical Works, 1724 S. 2nd St.,
St. Louis
Rohm & Haas Co., Inc.,
222 W. Washington Sq., Phila.
Stauffer Chem. Co., 420 Lexington Ave., N.Y.
Swann Chemical Co., 420 Lexington Ave., N.Y. See page 60.
Victor Chemical Wks., 141 W. Jackson Blvd.,
Chicago See page 63

ADHESIVES

Arabol Mfg. Co., 110 E. 42nd St., N.Y.
Armour Glue Wks., 1355 W. 31st St., Chicago See page 14.
Dennison Mfg. Co., Framingham, Mass.
W. H. Gage Glue Co., 19 S. Main St., St. Louis
Grasselli Chemical Co., 1300 Guardian Bdg., Cleveland See page 34.
Hull Co., 305 Washington St., Brooklyn
Mechling Bros. Chemical Co., Camden, N. J.
National Adhesives Corp., 822 Greenwich St.,
N.Y.
Philadelphia Quartz Co., 121 S. 3rd St., Phila.
Sanford Mfg. Co., W. Congress & Peoria St.,
Chicago
Staley Sales Corp., Decatur, Ill.
Standard Silicate Co., Bond Hill, Cincinnati
Stein, Hall & Co., 285 Madison Ave., N.Y.
Swann Chemical Co., 420 Lexington Ave., N.Y. See page 60.

AGITATORS

Alloy Prods. Corp., 221 Madison St.,
Waukesha, Wisc.
Also Engineering Corp., 39 W. 60th St., N.Y.
Atlantic Tank & Barrel Corp., North Bergen,
N.J.
Beach-Russ Co., 50 Church St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y. *(Used)* See page 26.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Foster Pump Works, 50 Washington St., Bklyn.
Houchin Machinery Co., Hawthorne, N. J.

Huber Machine Co., 265 46th St., Brooklyn
J. M. Lehmann Co., 248 W. Broadway, N.Y. See page 39.

Littleford Bros., 443 E. Pearl St., Cincinnati
Mixing Equipment Co., Inc., 1024 Garson Ave.,
Rochester, N. Y.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.

Patterson Foundry & Machy. Co.,
East Liverpool, Ohio
Petroleum Iron Works, Sharon, Pa.
Sowers Mfg. Co., 1296 Niagara St., Buffalo
Stein-Brill Corp., 183 Varick St., N.Y. (Used)
Struthers-Wells Co., Warren, Pa.

AIR COMPRESSORS (see COMPRESSORS, AIR)**ALCOHOL (Ethyl and Denatured)**
(see also Dealers)

American Coml. Alcohol Corp.,
420 Lexington Ave., N.Y.
American Solvents & Chem. Corp.,
285 Madison Ave., N.Y.
Commercial Solvents Corp., 17 E. 42nd St.,
N.Y.
Industrial Chem. Sales Co., Inc.,
230 Park Ave., N.Y.
Pennsylvania Sugar Co., 95 Wall St., N.Y.
Publicker Coml. Alcohol Co., 260 S. Broad St.,
Phila.
U. S. Industrial Alcohol Co.,
110 E. 42nd St., N.Y.

ALCOHOL (Wood or Methyl-Methanol)
(see also Dealers)

Carbide & Carbon Chemicals Corp.,
30 E. 42nd St., N.Y.
Cleveland-Cliffs Iron Co., Union Trust Bldg.,
Cleveland
Commercial Solvents Corp., 17 E. 42nd St., N.Y.
Du Pont Ammonia Corp., Wilmington, Del.
Roessler & Hasslacher Chem. Co.,
350 5th Ave., N.Y.
U. S. Industrial Alcohol Co.,
60 E. 42nd St., N.Y.
Wood Products Co., Buffalo, N.Y.

**ALKALIES, see CAUSTIC SODA, SODA ASH,
CAUSTIC POTASH, ETC.****ALUMINUM STEARATE (see STEARATES)****ALUMS***(see also Dealers)*

Armour Ammonia Wks., 1355 W. 31st St.,
Chicago See page 14.
E. I. Du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
General Chemical Co., 40 Rector St., N.Y. See page 32.
Grasselli Chemical Co., 1300 Guardian Bdg., Cleveland See page 34.
Harshaw Chemical Co., 1945 E. 97th St.,
Cleveland
Innis Speiden & Co., 117 Liberty St., N.Y. See page 36.
Paper Makers Chem. Corp., Kalamazoo, Mich.
Rohm & Haas Co., Inc.,
222 W. Washington Sq., Phila.
Stauffer Chem. Co., 420 Lexington Ave., N.Y.

AMALGAMATORS

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Houchin Machinery Co., Hawthorne, N.J.
Huber Mach. Co., 265-46th St., Brooklyn
J. M. Lehmann Co., 248 West B'way, N.Y.
See page 39.
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.
Stein-Brill Corp., 183 Varick St., N.Y. (Used)

AMMONIA WATER

(see also Dealers)

Barrett Co., 40 Rector St., N.Y. See page 18.
Bowker Chem. Co., 419 Fourth Ave., N.Y.
See page 20.
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
General Chemical Co., 40 Rector St., N.Y.
See page 32.
Grasselli Chemical Co., 1300 Guardian Bldg.,
Cleveland See page 34.
Mathieson Alkali Works, 250 Park Ave., N.Y.
Rohm & Haas Co., Inc.,
222 W. Washington Sq., Phila.

AMMONIUM BI-FLUORIDE

(see also Dealers)

American Cyanamid & Chem. Corp.,
535 - 5th Ave., N.Y. See page 11.
American Fluoride Corp., 151 W. 19th St., N.Y.
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
Harshaw Chemical Co., 1945 E. 97th St.,
Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
Jungmann & Co., 157 Chambers St., N.Y.
Merck & Co., Rahway, N.J. See page 44.
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

AMMONIUM CARBONATE

(see also Dealers)

American-British Chem. Supplies, Inc.,
180 Madison Ave., N.Y. See page 10.
American Cyanamid & Chem. Corp.,
535 - 5th Ave., N.Y. See page 11.
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
Jungmann & Co., 157 Chambers St., N.Y.
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

**AMMONIUM PERSULFATE (see POTAS-
SIUM PERSULFATE)****AMYL CINNAMIC ALDEHYDE (see ARO-
MATIC CHEMICALS)****AMYL SALICYLATE (see AROMATIC
CHEMICALS)****ANIMAL DIPS (see CATTLE DIPS)**

ANISE OIL (see ESSENTIAL OILS)

ANISIC ALDEHYDE (see AROMATIC
CHEMICALS)

AROMATIC CHEMICALS (for perfuming)

American-British Chem. Supplies, Inc.,
180 Madison Ave., N.Y. See page 10.
See page 10.
van Ameringen-Haebler, Inc.,
315-4th Ave., N.Y. See page 12.
Irving Bennett & Co., 64 W. 23rd St., N.Y.
Budd Aromatic Chemical Co.,
667 Washington St., N.Y. See page 22.
Ph. Chaleyer, Inc., 200 Varick St., N.Y.
See page 23.
Antoine Chiris Co., 147 Waverly Pl., N.Y.
Compagnie Parente, Inc.,
Croton-on-Hudson, N.Y.
Dodge & Olcott Co., 180 Varick St., N.Y.
Dow Chemical Co., Midland, Mich.
See page 29.
E. I. du Pont de Nemours & Co., Inc.,
Wilmington, Del. See page 4.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
See page 30.
A. C. Drury & Co., 219 East North Water St.,
Chicago. See page 31.
Felton Chemical Co., 599 Johnson Ave., Bklyn.
Benj. French, Inc., 160-5th Ave., N.Y.
Fritzsche Brothers, Inc., 78 Beekman St., N.Y.
General Drug Co., 170 Varick St., N.Y.
Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.
See page 33.
Industrial Organics, 131 E. 45th St., N.Y.
C. E. Ising Corp., Flushing, L. I., N.Y.
Kay-Fries Chemicals, Inc.,
180 Madison Ave., N.Y. See page 10.
Pierre Lemoine, Inc., 200 Varick St., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.
See page 40.
Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
A. Maschmeijer, Jr., 43 West 16th St., N.Y.
Monsanto Chemical Works, 1724 S. 2nd St.,
St. Louis
Naugatuck Chem. Co., 1790 Broadway, N.Y.
Neumann-Buslee & Wolfe, 224 W. Huron St.,
Chicago
Norda, Inc., 601 W. 26th St., N.Y.
Northwestern Chemical Co., Wauwatosa, Wis.
Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.
Riviera Prods. Co., 215 W. Ohio St.,
Chicago, Ill.
H. C. Ryland, Inc., 161 Water St., N.Y.
Edwin Seebach Co., 912 Broadway, N.Y.
Sherka Chemical Co., 75 West St., N.Y.
Wm. G. Sibbach & Co., 201 S. 2nd Ave.,
Maywood, Ill.
George Silver Import Co., 461-4th Ave., N.Y.
Synfleur Scientific Labs., Monticello, N.Y.
A. M. Todd Co., Kalamazoo, Mich.
Trubek Labs., East Rutherford, N.J.
Ungerer & Co., 13 W. 20th St., N.Y.
See page 61.
Van Dyk & Co., 57 Wilkinson Ave.,
Jersey City, N.J. See page 62.
Albert Verley, Inc., 11 E. Austin Ave., Chicago

ARSENICAL DIPS

Baird & McGuire, Inc., Holbrook, Mass.

See page 16.

Wm. Cooper & Nephews, 1909 Clifton Ave.,
Chicago

General Chemical Co., 40 Rector St., N.Y.

See page 32.

Koppers Products Co., Koppers Bldg.

Pittsburgh

See page 37.

McLaughlin, Gormley King Co., Minneapolis

White Tar Co., Kearny, N. J. See page 37.

ARSENICAmerican Smelting & Refining Co.,
120 Broadway, N.Y.

Charles Hardy, Inc., 415 Lexington Ave., N.Y.

Harshaw Chemical Co., Cleveland

Innis, Speiden & Co., 117 Liberty St., N.Y.

See page 36

AUTO SOAPS

Armour Soap Wks., 1355 W. 31st St., Chicago

See page 14.

Clifton Chemical Co., 246 Front St., N.Y.

See page 24.

Crystal Soap & Chem. Co., State Rd. &
Robbins Ave., Phila.

Davies Young Soap Co., Dayton, Ohio

See page 28.

Diamond Soap Co., 1 Lowden St.,
Elizabeth, N. J.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

J. Eavenson & Sons, Del. & Penn. Sts.,

Camden, N. J.

Fischer Oil & Chem. Co., Bond Hill,

Cincinnati

Fuld Bros., 2308 Frederick Ave., Baltimore

Genesee Bros., W. 48th Pl. & Whipple St.,
Chicago, Ill.

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chemical Co., 30 Bluxome St.,

San Francisco

R. M. Hollingshead Co.,

840 Cooper St., Camden, N. J.

Holman Soap Co., 3100 Fox St., Chicago, Ill.

Hull Co., 305 Washington St., N.Y.

Jansen Soap & Chemical Co.,

324 Leavenworth St., San Francisco, Cal.

H. Kohnstamm & Co., 91 Park Pl., N.Y.

Kranich Soap Co., 54 Richards St., Brooklyn

Los Angeles Soap Co., Los Angeles, Calif.

Marshall Prods., Inc., 806 N. 1st St., St. Louis

National Oil Products Co., Harrison, N.J.

National Soap Co., 357 South 25th St.,

Tacoma, Washington

North Coast Chem. & Soap Wks.,

Seattle, Wash.

Palmer Products, Inc., Waukesha, Wis.

Paper Makers Chemical Corp.,

Kalamazoo, Mich.

Peck's Prod. Co., 5224 N. 2nd St., St. Louis

Procter & Gamble Co., Cincinnati

Theo. B. Robertson Prods. Co.,

700 W. Division St., Chicago

Royal Soap & Chem. Co., 5111 S. Central Ave.,

Los Angeles

Geo. A. Schmidt Co., 236 W. North Ave., Chgo.

Werner G. Smith Co., 2191 W. 110th St.,

Cleveland

John T. Stanley Co., 640 W. 30th St., N.Y.

State Chemical Mfg. Co., 2435 Superior Ave.,

Cleveland, O.

U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

Vliet Soap Co., 638 Monroe St., Brooklyn

Chas. W. Young & Co., Phila.

BAG LINERS

Arkell Safety Bag Co., 10 E. 40th St., N.Y.

Bemis Bro. Bag Co., 603 S. 4th St., St. Louis

Central Bag & Burlap Co.,

4513 S. Western Blvd., Chicago

Chase Bag Co., 250 W. 57th St., N.Y.

Dayton Bag & Burlap Co., Dayton, O.

Fulton Bag & Cotton Mills, Atlanta, Ga.

Hammond Bag & Paper Co.,

Wellsburg, W. Va.

Mente & Co., New Orleans, La.

Paper Service Co., Lockland, Cincinnati

Premier Bag Co., 157 South St., N.Y.

BAGS (Cloth)

Bemis Bro. Bag Co., 603 S. 4th St., St. Louis

Central Bag & Burlap Co.,

4513 S. Western Blvd., Chicago

Chase Bag Co., 250 W. 57th St., N.Y.

Dayton Bag & Burlap Co., Dayton, O.

Fulton Bag & Cotton Mills, Atlanta, Ga.

Hammond Bag & Paper Co.,

Wellsburg, W. Va.

Mente & Co., New Orleans, La.

Paper Service Co., Lockland, Cincinnati

Premier Bag Co., 157 South St., N.Y.

BAGS (Paper)

Arkell Safety Bag Co., 10 E. 40th St., N.Y.

Bemis Bro. Bag Co., 603 S. 4th St., St. Louis

Chase Bag Co., 250 W. 57th St., N.Y.

Crepe-Kraft Co., 114 Adams St., Newark, N. J.

Hammond Bag & Paper Co.,

Wellsburg, W. Va.

Nashua Gummed & Coated Paper Co.,

Nashua, N. H.

Paper Service Co., Lockland, Cincinnati

St. Regis Paper Co., 60 E. 42nd St., N.Y.

Union Bag & Paper Co., 233 B'way, N.Y.

BAGS (Waterproof)

Bemis Bro. Bag Co., 603 S. 4th St., St. Louis

Chase Bag Co., 250 W. 57th St., N.Y.

Hammond Bag & Paper Co.,

Wellsburg, W. Va.

Paper Service Co., Lockland, Cincinnati, O.

St. Regis Paper Co., 60 E. 42nd St., N.Y.

BALSAMS

van Ameringen-Haebler, Inc.,

315—4th Ave., N.Y.

See page 12.

Ph. Chaleyer, Inc., 200 Varick St., N.Y.

See page 23.

Antoine Chiris Co., 147 Waverly Pl., N.Y.

Dodge & Olcott Co., 180 Varick St., N.Y.

P. R. Dreyer Inc., 12 E. 12th St., N.Y.

See page 30.

A. C. Drury & Co., 219 North East Water St.,

Chicago

See page 31.

Fritzsche Brothers, Inc., 78 Beekman St., N.Y.

Geo. Lueders & Co., 427 Washington St., N.Y.

See page 40.

Magnus, Mabee & Reynard, 32 Cliff St., N.Y.

S. B. Penick & Co., 132 Nassau St., N.Y.

See page 47.

Ungerer & Co., 13 W. 20th St., N.Y.

See page 61.

Albert Verley, Inc., 11 E. Austin Ave., Chicago

BARIUM CARBONATE

Alton Barium Prods. Co., Alton, Ill.
 Fezandie & Sperrle, 205 Fulton St., N.Y.
Grasselli Chemical Co., 1300 Guardian Bldg., Cleveland See page 34.
 Harshaw Chemical Co.,
 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.
Merck & Co., Rahway, N. J. See page 44.
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

Colwell Cooperage Co., 245 Broadway, N.Y.
 J. D. Hollingshead Co., 612 N. Michigan Ave., Chicago
 Louisville Cooperage Co., Louisville, Ky.
 Michel Cooperage Co., Sandusky, O.
 Weinrick Cooperage Co., Burlington, Iowa
 Western Cooperage Co., Portland, Oregon

BARREL LINERS

Arkell Safety Bag Co., 10 E. 40th St., N.Y.
 Bemis Bro. Bag Co., 603 S. 4th St., St. Louis
 Chase Bag Co., 250 W. 57th St., N.Y.
 Crepe-Kraft Co., 114 Adams St., Newark, N.J.
 Paper Service Co., Lockland, Cincinnati, O.

BARREL TILTTERS

Economy Eng. Co., 2651 W. Van Buren St., Chicago
 Schwenck Safety Device Corp.,
 27 Water St., N.Y.

BARRELS (Fibre)

Carpenter Container Co., 147-41st St., Bklyn.
 Champion Container Co., Water & Morris Sts., Philadelphia
 Container Co., Van Wert, O.
 Diamond State Fibre Co., Bridgeport, Pa.
 Rogers Fibre Co., 121 Beath St., Boston

BATH SALT COLORS

Fezandie & Sperrle, 205 Fulton St., N.Y.
 Interstate Color Co., 5 Beekman St., N.Y.
 H. Kohnstamm & Co., 91 Park Pl., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y. See page 52.

BATH SALTS

(see also Essential Oils)

Crystal Labs., Inc., 21 W. Park Way, N. S., Pittsburgh, Pa.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Jansen Soap & Chemical Co.,
 324 Leavenworth St., San Francisco, Cal.
 Lightfoot-Schultz Co., 1412 Park Ave.,
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Geo. A. Schmidt Co., 236 W. North Ave., Chgo.
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago
 Hoboken, N. J.

BAY OIL (see ESSENTIAL OILS)**BAY RUM**

P. R. Dreyer Inc., 12 E. 12th St., N.Y. See page 30.
Givaudan-Delawanna, Inc., 80-5th Ave., N.Y. See page 33.
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Chas. L. Husking & Co., 155 Varick St., N.Y.
 Lanman & Kemp-Barclay Co.,
 135 Water St., N.Y.
 McKesson & Robbins, 79 Cliff St., N.Y.
 Norda, Inc., 601 W. 26th St., N.Y.
Ungerer & Co., 13 W. 20th St., N.Y. See page 61.

BARRELS (Used Steel)

American Cooperage Co., Maurer, N.J.
 Newark Steel Drum Co., Linden, N.J.
Newman Tallow & Soap Machinery Co., 1051 W. 35th St., Chicago See page 45.
 John Trageser Steam Copper Wks.,
 Grand Ave., Maspeth, L. I., N.Y.

BEES WAX

Balfour, Guthrie & Co., Ltd. 67 Wall St., N.Y.
 Cantol Wax Co., Bloomington, Ind.
 T. G. Cooper & Co., 47 N. 2nd St., Phila.
 William H. Dey & Co., 11 Water St., N.Y.
A. C. Drury & Co., 219 North East Water St., Chicago, Ill. See page 31.
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.
 Muench-Kreuzer Candle Co., Syracuse, N.Y.
 Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
S. B. Penick & Co., 132 Nassau St., N.Y. See page 47.
 Will & Baumer Candle Co., Syracuse, N.Y.

BARRELS (Wooden)

Allied Barrel Co., Oil City, Pa.
 American Barrel Co., 205 Bridge St.,
 Salem, Mass.
 American Cooperage Co., Maurer, N.J.
 Atlantic Tank & Barrel Corp.,
 North Bergen, N. J.

BELLOWS, INSECT POWDER

Acmeine, Inc., Traverse City, Mich.
 Feeny Mfg. Co., Muncie, Ind.
 Thomas W. Houchin Co., 9-15 McPherson Pl.,
 Jersey City, N. J.
 Lowell Sprayer Co., Lowell, Mich.

BENTONITE

American Colloid Co., Transportation Bldg.,
 Chicago
 Chas. B. Chrystal Co., 11 Park Pl., N.Y.
 Hammill & Gillespie, 225 Broadway, N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 National Sales Corp., 31 E. 13th St., Cinn.
 Owyhee Chemical Products Co.,
 300 W. Adams St., Chicago
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.
 R. F. Revson Co., 91-7th Ave., N.Y.
 L. A. Salomon & Bro., 216 Pearl St., N.Y.
 Silica Products Co., 700 Baltimore Ave.,
 Kansas City, Mo.
 Tamms Silica Co., 228 N. La Salle St., Chicago
 G. A. Wharry & Co., 15 Moore St., N.Y.
 Whittaker, Clark & Daniels, 246 Front St., N.Y.
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

BENZALDEHYDE

van Ameringen-Haebler, Inc.,
 315-4th Ave., N.Y. See page 12.
 Dodge & Olcott Co., 180 Varick St., N.Y.
 Dow Chemical Co., Midland, Mich.
 See page 30.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
 See page 29.
E. I. du Pont de Nemours Co., Inc.,
 Wilmington, Del. See page 4.
 Felton Chemical Co., 599 Johnson Ave., Bklyn.
 Fritzsch Brothers, Inc., 78 Beekman St., N.Y.
 Heyden Chem. Co., 50 Union Sq., N.Y.
Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.
 See page 33.
 Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
 Monsanto Chemical Works, 1724 S. 2nd St.,
 St. Louis
Solvay Sales Corp., 61 Broadway, N.Y.
 See page 56.
Ungerer & Co., 13 W. 20th St., N.Y.
 See page 61.
Van Dyk & Co., 57 Wilkinson Ave.,
 Jersey City, N. J. See page 62.
 Albert Verley, Inc., 11 E. Austin Ave., Chicago

BENZENE (Benzol)

Barrett Co., 40 Rector St., N.Y. See page 18.
 Wm. Cooper & Nephews, 1909 Clifton Ave.,
 Chicago
 Hydrocarbon Products, 117 Liberty St., N.Y.
 William E. Jordan & Bro., 2590 Atlantic Ave.,
 Brooklyn
Koppers Prods. Co., Koppers Bldg.,
 Pittsburgh, Pa. See page 37.

BERGAMOT OIL (see ESSENTIAL OILS)**BLEACHING AGENTS (Chemical)**

Buffalo Electro Chem. Co.,
 River Rd. & Sawyer Ave., Buffalo, N.Y.
Grasselli Chemical Co., 1300 Guardian Bldg.,
 Cleveland See page 34.
Hooker Electrochemical Co.,
 60 E. 42nd St., N.Y. See page 35.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Jungmann & Co., 157 Chambers St., N.Y.
 Mathieson Alkali Works, 250 Park Ave., N.Y.
 Rohm & Haas Co., Inc.,
 222 W. Washington Sq., Phila.
 Joseph Turner & Co., 500-5th Ave., N.Y.
Warner Chem. Co., Chrysler Bldg., N.Y.
 See page 64.
 Jacques Wolf & Co., Passaic, N. J.

BLEACHING POWDER (Chloride of Lime)

Grasselli Chemical Co., 1300 Guardian Bldg.,
 Cleveland See page 34.
Hooker Electrochemical Co.,
 60 E. 42nd St., N.Y. See page 35.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Mathieson Alkali Works, 250 Park Ave., N.Y.
Niagara Alkali Co., 9 E. 41st St., N.Y.
 See page 46.
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.
 Truempy, Faesy & Besthoff, Inc.,
 22 E. 40th St., N.Y.
 Joseph Turner & Co., 500-5th Ave., N.Y.

BLOCK HOLDERS (see HOLDERS, DEODORIZING BLOCK)**BLOWERS for POWDER INSECTICIDES
(see BELLOWS)****BLOWERS, ELECTRIC (see SPRAYERS,
ELECTRIC)****BLUING (see LAUNDRY BLUE)****BOIS de ROSE OIL (see ESSENTIAL OILS)****BORAX**

American Potash & Chem. Corp.,
 233 Broadway, N.Y.
 Borax Union, 420 Lexington Ave., N.Y.
 General Chem. Co., 40 Rector St., N.Y. See page 32.
Grasselli Chemical Co., 1300 Guardian Bldg.,
 Cleveland See page 34.
 Harshaw Chemical Co., 1945 E. 97th St.,
 Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Pacific Coast Borax Co.,
 100 William St., N.Y.
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

BOTTLES

American Bottle Co., Toledo, O.
 Berney-Bond Glass Co., 50 Church St., N.Y.
 Capstan Glass Co., Connellsburg, Pa.
 Graham Glass Co., Evansville, Ind.
 Kimble Glass Co., Vineland, N. J.
 Maryland Glass Corp., Baltimore, Md.
 Millville Bottle Wks., Millville, N. J.
 Owens Illinois Glass Co., Toledo, O.
 F. E. Reed Glass Co., 860 Maple St.,
 Rochester, N.Y.
 Root Glass Co., Terre Haute, Ind.
 Ruth Glass Co., Conshohocken, Pa.
 Tygart Valley Glass Co., Washington, Pa.
 T. C. Wheaton Co., Millville, N. J.

BOTTLE FILLING MACHINERY (see FILLING MACHINERY, BOTTLES)**BOTTLE WASHERS (see WASHING MACHINERY, BOTTLES)****BOX LINERS (see BAG LINERS)****BOXES (Corrugated and/or Fibre)**

Brooklyn Fibre Syndicate,
 Decatur St. & Irving Ave., Brooklyn
 Cambridge Paper Box Co., 196 Broadway,
 Cambridge, Mass.
 Consolidated Paper Co., Monroe, Mich.
 Container Corp. of America,
 111 W. Washington St., Chicago
 Robert Gair Co., 420 Lexington Ave., N. Y.
 Hinde & Dauch Paper Co., Sandusky, O.
 Interstate Corrugated Box Co., 75 Front St.,
 Brooklyn
 F. J. Kress Box Co., 2930 Liberty Ave.,
 Pittsburgh
 River Raisin Paper Co., Monroe, Mich.

BOXES (Fancy Paper)

Alderman-Fairchild Co., 367 Orchard St.,
 Rochester, N.Y.
 Baxter Paper Co., Brunswick, Maine
 F. N. Burt Co., Ltd., 540 Seneca St.,
 Buffalo, N.Y.
 C. J. Fox Co., 236 Abron St., Providence, R. I.
 Foxon Paper Co., 230 West Park St.,
 Providence, R. I.
 Robert Gair Co., 420 Lexington Ave., N.Y.
 R. R. Heywood, Inc.,
 26th St. & 9th Ave., N.Y.
 R. J. Kittredge Co., 812 W. Superior St.,
 Chicago
 Pictorial Package Co., Aurora, Ill.
 Potomac Lithograph Mfg. Co.,
 Washington, D. C.
 W. C. Ritchie & Co., 400 S. Green St., Chicago
 Robertson Paper Box Co., Montville, Conn.
 Geo. Schmitt & Co., Grand & Florence Sts.,
 Brooklyn
 U. S. Printing & Lithographing Co.,
 Norwood, Cincinnati

BOXES (Fancy Wooden)

Pilliod Cabinet Co., Swanton, O.

BROKERS (Chemicals)

Dickerson Co., Drexel Bldg., Phila.
 Otto A. C. Hagen Co., Public Ledger Bldg.,
 Phila.
 Chas. L. Huisking & Co., 5 Platt St., N.Y.
 C. B. Peters Co., 110 William St., N.Y.
 George Uhe, Inc., 11 Cliff St., N.Y.
 Wilson Brokerage, Inc.,
 Produce Exchange, N.Y.

BROKERS (Oils and Fats)

C. R. Antz & Co., 25 Beaver St., N.Y.
 Irving R. Boody Co., 99 Wall St., N.Y.
 Davidson Commission Co.,
 175 W. Jackson Blvd., Chicago
 Frey & Horgan, 25 Beaver St., N.Y.
 John W. Hall, 327 S. La Salle St., Chicago
 Otto A. C. Hagen Co., Public Ledger Bldg.,
 Phila.
 Hentz & Co., 60 Beaver St., N.Y.
 Chas. Hollingshead Co.,
 Produce Exchange, N.Y.
 Horner Commission Co., 15 William St., N.Y.
 Miller & Co., 2401 Chestnut St., Philadelphia
 Rayner & Stonington, Inc., 79 Wall St., N.Y.
 See inside back cover.
 Roesling, Monroe & Co., 25 Broadway, N.Y.
 Snow Brokerage Co.,
 Wholesale Terminal Bldg., Los Angeles
 Sterne & Son Co., Produce Exchange, N.Y.
 United Africa Co., 67 Wall St., N.Y.
 H. L. Webster & Co., 111 W. Washington St.,
 Chicago
 Welch, Holme & Clark Co., Inc.,
 563 Greenwich St., N.Y.
 See inside back cover.
 G. A. Wharry & Co., 15 Moore St., N.Y.
 Wilbur-Ellis & Redding Co.,
 17 Battery Pl., N.Y. See page 65.
 J. R. Wilder, Produce Exchange, N.Y.
 Wilson Brokerage, Inc.,
 Produce Exchange, N.Y.

BROOMS

Alabama Broom & Mattress Co.,
 Huntsville, Ala.
 Burdett-Rose Mfg. Co.,
 6100 Independence Rd., Kansas, Mo.
 Chattanooga Broom & Mop Co.,
 Chattanooga, Tenn.
 Detroit Quality Brush Mfg. Co.,
 5937 Michigan Ave., Detroit
 Eagle Woodenware Co., Hamilton, O.
 Kendallville Brush & Broom Co.,
 Kendallville, Ind.
 Tate Mfg. Co., 67 Sudbury St., Boston, Mass.
 M. J. Toohey & Co., Fall River, Mass.

BRUSHES

American Standard Mfg. Co.,
 2509 Lime St., Chicago
 Auburn Brush Co., Columbia, Pa.
 Bay State Brush & Mop Co., Woburn, Mass.
 Burdett-Rose Mfg. Co.,
 6100 Independence Rd., Kansas City, Mo.
 Detroit Quality Brush Mfg. Co.,
 5937 Michigan Ave., Detroit
 Illinois Brush Mfg. Co.,
 3316 Ogden Ave., Chicago

BRUSHES, (Contd.)

W. E. Kautenberg Co., P. O. Box 255, Freeport, Ill.
 Kendallville Brush & Broom Co., Kendallville, Ind.
 Marcus Brush Co., 233 Broadway, N.Y.
 National Brush Co., Aurora, Ill.
 New Jersey Brush Mfg. Co., Newton, N. J.
 Opie Brush Co., Kansas City, Mo.
 Ox Fibre Brush Co., Frederick, Md.
 Pioneer Mfg. Co., Cleveland, O.
 Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
 Sanitary Mfg. Co., 926 Ft. Wayne Ave., Indianapolis, Ind.
 Silver-Chamberlin Co., Clayton, N. J.
 Sullivan Brush Co., Terre Haute, Ind.
 Tate Mfg. Co., 67 Sudbury St., Boston, Mass.

CAJUPUT OIL (see ESSENTIAL OILS)**CALCIUM STEARATE (see STEARATES)****CAMPHOR OIL, SASSAFRASSY (see ESSENTIAL OILS)****CAMPHOR OIL, WHITE (see ESSENTIAL OILS)****CAN FILLING MACHINERY (see FILLING MACHINERY, CANS)****CANANGA OIL (see ESSENTIAL OILS)****CANDELILLA WAX (see WAXES)****CANS (Decorated Tin)**

American Can Co., 230 Park Ave., N.Y.
 J. L. Clark Mfg. Co., Rockford, Ill.
 Columbia Can Co., 5221 Natural Bridge Ave., St. Louis
 Continental Can Co., Inc., 100 E. 42nd St., N.Y. See page 27.
 Geuder, Paeschke & Frey Co., Milwaukee, Wis.
 Giles Can Co., 2444 W. 16th St., Chicago
 Heekin Can Co., Cincinnati
 Metal Package Corp., 110 E. 42nd St., N.Y.
 W. F. Robertson Steel & Iron Co., Springfield, O.
 St. Louis Can Co., 715 S. Wolfe St., St. Louis
 Tin Decorating Co., of Baltimore, Baltimore
 Wilkes-Barre Can Co., Kingston, Pa.
 William Vogel & Bros., Inc., 37 S. 9th St., Brooklyn

CANS (Fibre or Paper)

American Can Co., 230 Park Ave., N.Y.
 Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
 Canister Co., Phillipsburg, N. J.
 Cin-Made Corp., 294 Eggleston Ave., Cincinnati
 Cleveland Container Co., 10630 Berea Rd., Cleveland
 Cross Paper Products Co., 2595 Third Ave., N.Y.
 Fonda Container Co., 41 Park Row, N.Y.
 Metal Pkg. Corp., 110 E. 42nd St., N.Y.
 Midwest Paper Container Co., 707 N. 3rd St., Minneapolis
 National Paper Can Co., Cudahy, Wis.

R. C. Can Co., 121 Chambers St., St. Louis
 W. C. Ritchie & Co., 8855 S. Baltimore Ave., Chicago
 Sefton National Fibre Can Co., 3275 Big Bend Bldg., St. Louis

CANS (Plain Tin)

American Can Co., 230 Park Ave., N.Y.
 J. L. Clark Mfg. Co., Rockford, Ill.
 Columbia Can Co., 5221 Natural Bridge Ave., St. Louis
 Continental Can Co., Inc., 100 E. 42nd St., N.Y. See page 27.
 Fein's Tin Can Co., 284 Furman St., Brooklyn
 Giles Can Co., 2444 W. 16th St., Chicago
 Heekin Can Co., Cincinnati
 Metal Pkg. Corp., 110 E. 42nd St., N.Y.
 St. Louis Can Co., 715 S. Wolfe St., St. Louis
 Tin Decorating Co. of Baltimore, Baltimore
 William Vogel & Bro., Inc., 37 S. 9th St., Bklyn.

CANS (Sifter Top)

American Can Co., 230 Park Ave., N.Y.
 Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N.Y.
 Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
 Cleveland Container Co., 10630 Berea Rd., Cleveland
 Cin-Made Corp., 294 Eggleston Ave., Cincinnati
 Continental Can Co., Inc., 100 E. 42nd St., N.Y. See page 27.
 Giles Can Co., 2444 W. 16th St., Chicago
 Metal Pkg. Corp., 110 E. 42nd St., N.Y.
 R. C. Can Co., 121 Chambers St., St. Louis
 Sefton National Fibre Can Co., 3225 Big Bend Bldg., St. Louis
 Tin Decorating Co., of Baltimore, Boston St. & Linwood Ave., Baltimore, Md.
 William Vogel & Bro., Inc., 37 S. 9th St., Bklyn.

CANS (Steel)

American Can Co., 230 Park Ave., N.Y.
 Fein's Tin Can Co., 284 Furman St., Brooklyn
 Geuder, Paeschke & Frey Co., Milwaukee
 Niles Steel Prods. Co., 465 Walnut St., Niles, Ohio
 Ohio Pail Co., Middlefield, Ohio
 Pressed Steel Tank Co., 5717 Greenfield Ave., Milwaukee
 John Trageser Steam Copper Works, Grand Ave., Maspeth, L. I., N.Y.
 Wilson & Bennett Mfg. Co., 6532 Menard St., Chicago

CAPPING MACHINERY

Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N.Y.
 Consolidated Packaging Machinery Corp., 1400 West Ave., Buffalo, N.Y.
 Consolidated Prods. Co., 15 Park Row, N.Y. (Used) See page 26.
 Ferdinand Gutmann & Co., 168-39th St., Bklyn.
 Karl Kiefer Machine Co., Cincinnati, Ohio
 Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) See page 45.
 Phoenix Metal Cap Co., 2444 W. 16th St., Chicago

CAPPING MACHINERY, (Contd.)

Pneumatic Scale Corp., Norfolk Downs, Mass. See page 48.
 C. T. Small Mfg. Co., 1204 Ferguson Ave., St. Louis
 Stein-Brill Corp., 183 Varick St., N.Y. (Used)
 Williams Sealing Corp., Decatur, Ill.

CAPPING MATERIALS

Du Pont Cellophane Co., 2 Park Ave., N.Y.
 Ferdinand Gutmann & Co.,
 Bush Terminal Bldg. #19, Bklyn.
 Sylvania Industrial Corp., Chanin Bldg., N.Y.
 Paul Troeder, Belleville, N. J.

CAPS (Composition)

Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N.Y.
 Armstrong Cork & Insulation Co., Lancaster, Pa.
 Bakelite Corp., Bound Brook, N. J.
 General Plastics, Inc., N. Tonawanda, N.Y.
 Resinox Corp., Terre Haute, Ind.
 Toledo Synthetic Prods Co., Toledo, O.

CAPS (Metal)

Aluminum Co. of America, 120 B'way, N.Y.
 Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N.Y.
 Armstrong Cork & Insulation Co., Lancaster, Pa.
 Closure Service Co., Toledo, O.
 Crown Cork & Seal Co., Eastern Ave. & Kresson St., Baltimore
 Ferdinand Gutmann & Co.,
 Bush Terminal Bldg. #19, Bklyn.
 Metal Pkg. Corp., 110 E. 42nd St., N.Y.
 National Seal Co., 14th Ave. & 37th St., Bklyn.
 Phoenix Metal Cap Co., 2444 W. 16th St., Chicago
 Tin Decorating Co. of Baltimore,
 Boston St. & Linwood Ave., Baltimore, Md.
 Williams Sealing Corp., Decatur, Ill.
 William Vogel & Bros., Inc., 37 S. 9th St., Bklyn.

CARAWAY OIL (see ESSENTIAL OILS)**CARBOLIC ACID, CRUDE (see TAR ACID)****CARBON BISULFIDE***(see also Dealers)*

Dow Chemical Co., Midland, Mich. See page 29.
 E. I. du Pont de Nemours & Co.,
 Wilmington, Del. See page 4.
 Grasselli Chemical Co., 1800 Guardian Bldg., Cleveland See page 34.
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.
 Warner Chemical Co., 405 Lexington Ave., N.Y. See page 64.

CARBON TETRACHLORIDE*(see also Dealers)*

J. T. Baker Chemical Co., Phillipsburg, N. J.
 Brown Co., Portland, Me.
 Dow Chemical Co., Midland, Mich.

See page 29.

E. I. du Pont de Nemours & Co.,
 Wilmington, Del. See page 4.
 Grasselli Chemical Co., 1800 Guardian Bldg., Cleveland See page 34.
 Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.
 Merck & Co., Rahway, N.J. See page 44.
 Niagara Smelting Corp., Niagara Falls, N.Y.
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.
 Warner Chemical Co., 405 Lexington Ave., N.Y. See page 64.

CARNAUBA WAX (see WAXES)**CARTON LINING MACHINES (see LINING MACHINERY)****CARTON SEALING MACHINERY (see SEALING MACHINERY)****CARTONING MACHINERY**

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) See page 26.
 J. L. Ferguson Co., Joliet, Ill.
 R. A. Jones & Co., Cincinnati, O.
 Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) See page 45.
 Pneumatic Scale Corp., Norfolk Downs, Mass. See page 48.
 F. B. Redington Co., 112 S. Sangamon St., Chicago
 Stokes & Smith Co., Summerdale, Phila., Pa. See page 59.
 Triangle Package Machinery Co., 910 N. Spaulding Ave., Chicago

CARTONS (Display and Knock Down)

Alderman-Fairchild Co., Rochester, N.Y.
 F. N. Burt Co., 540 Seneca St., Buffalo, N.Y.
 Consolidated Paper Co., Monroe, Mich.
 Robert Gair Co., 420 Lexington Ave., N.Y.
 Nevins-Church Co., 250 Park Ave., N.Y.
 New England Card & Paper Co., Springfield, Mass.
 Pictorial Package Co., Aurora, Ill.
 Randolph Box & Label Co., 843 W. Van Buren St., Chicago
 W. C. Ritchie & Co., 8855 S. Baltimore Ave., Chicago
 Robertson Paper Box Co., Inc., Montville, Conn.
 George Schmitt & Co., Grand & Florence Sts., Bklyn.
 U. S. Printing & Lithographing Co., Cincinnati, O.

CASE SEALING MACHINERY (see SEALING MACHINERY)**CASEIN**

Innis-Speiden & Co., 117 Liberty St., N.Y. See page 36.
 Jungmann & Co., 157 Chambers St., N.Y.
 Land-o'Lakes Creameries, Minneapolis
 National Casein Co., 603 W. 80th St., Chicago
 Paper Makers Chemical Corp., Kalamazoo, Mich.

CASES (Fibre) see BOXES**CASES (Corrugated) see BOXES****CASTILE SOAP**

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.

Cincinnati Soap Co., Cincinnati
Conti Soap Distributors, 16 Atlantic Ave.,
Brooklyn, N.Y.

A. C. Drury & Co., 219 East North Water St.,
Chicago
See page 31.

Green Oil Soap Co., 166 N. Curtis St., Chicago
Hochwald Chem. Co., 30 Bluxome St.,
San Francisco

Holbrook Mfg. Co., 18th St., Jersey City, N.J.
H. Kohnstamm & Co., 91 Park Pl., N.Y.

Kranich Soap Co., 54 Richards St., Brooklyn

Leghorn Trading Co., 155 E. 44th St., N.Y.
See page 38.

Levant Castile Soap Co., 327-36th St.,
Brooklyn

Los Angeles Soap Co., Los Angeles, Calif.
Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.
Murray & Nickell Mfg. Co.,
2608 Arthington St., Chicago

S. B. Penick & Co., 132 Nassau St., N.Y.
See page 47.

Lockwood-Brackett Co., Waltham Station,
Boston

Newell Gutradt Co., 350 Fremont St.,
San Francisco, Calif.

Soaps-Perfumes, Ltd., 84 Front St.,
East Toronto

Welch, Holme & Clark, Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.

Allen B. Wrisley Co., 6801 W. 65th St., Chicago

CASTILE SOAP, LIQUID

Antiseptol Liquid Soap Co.,
5424 North West Highway, Chicago
Clifton Chemical Co., 246 Front St., N.Y.
See page 24.

Davies-Young Soap Co., Dayton, O.
See page 28.

Eagle Soap Co., 25 E. Jackson Blvd., Chicago
Kranich Soap Co., 54 Richards St., Brooklyn
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago

U. S. Sanitary Spec. Corp., 435 S. Western Ave.,
Chicago

Allen B. Wrisley Co., 6801 W. 65th St.,
Chicago

CASSIA OIL (see ESSENTIAL OILS)**CASTOR OIL**

(see also Dealers)

Archer-Daniels-Midland Co., Minneapolis
Baker Castor Oil Co., 120 Broadway, N.Y.
Balfour, Guthrie & Co., 67 Wall St., N.Y.
National Oil Products Co., Harrison, N. J.
Spencer Kellogg & Sons, Buffalo, N.Y.
United Africa Co., 67 Wall St., N.Y.

Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y. (Dealers)
See inside back cover.

CATTLE DIPS (Also Sheep Dips)

Baird & McGuire, Holbrook, Mass.
See page 16.

Chemical Compounding Corp.,
262 Huron St., Bklyn.

Clifton Chem. Co., 246 Front St., N.Y.
See page 24.

Chem. Supply Co., 2450 Canal Rd., Cleveland

General Chem. Co., 40 Rector St., N.Y.
See page 32.

Goulard & Olena, 140 Liberty St., N.Y.
Hochwald Chem. Co., 30 Bluxome St.,
San Francisco

William E. Jordan & Bros., 2590 Atlantic Ave.,
Brooklyn

Kay Chemical Co., 329 Ringold St.,
Baltimore, Md.

Koppers Prods. Co., Koppers Bldg.,
Pittsburgh, Pa.
See page 37.

Marshall Prods., Inc., 806 N. 1st St., St. Louis

McLaughlin, Gormley King Co.,
Minneapolis, Minn.

North Coast Soap & Chem. Wks., Seattle, Wash.

Palmer Prods., Inc., Waukesha, Wis.

Peck's Prod. Co., 5224 N. 2nd St., St. Louis

Shores Co., Cedar Rapids, Ia.

U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

Robert C. White Co., Falls of Schuylkill, Phila.

White Tar Co., Kearny, N. J.
See page 37

CATTLE SPRAY BASE (see PETROLEUM)**CATTLE SPRAYS**

Baird & McGuire, Inc., Holbrook, Mass.
See page 16.

Chemical Compounding Corp., 262 Huron St.,
Brooklyn

Chemical Supply Co., 2450 Canal Rd., Cleveland

Clifton Chemical Co., 246 Front St., N.Y.
See page 24.

B. R. Elk & Co., Garfield, N.J.
Fuld Bros., 2308 Frederick Ave., Baltimore

Elkay Prods. Corp., 542-1st Ave., N.Y.

Goulard & Olena, 140 Liberty St., N.Y.
Hochwald Chem. Co., 30 Bluxome St.,
San Francisco

R. M. Hollingshead Co., 840 Cooper St.,
Camden, N.J.

Kay Chemical Co., 329 Ringold St.,
Baltimore, Md.

Koppers Prods. Co., Koppers Bldg.,
Pittsburgh, Pa.
See page 37.

Marshall Prods., Inc., 806 N. 1st St., St. Louis

Mechling Bros. Chemical Co.,
Line St. & Coopers Creek, Camden, N.J.

Palmer Products, Inc., Waukesha, Wis.

Sherwin-Williams Co., 601 Canal Rd.,
Cleveland, O.

Shores Co., Cedar Rapids, Ia.

U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

Robert C. White Co., Falls of Schuylkill, Phila.

White Tar Co., Kearny, N. J.
See page 37.

CAUSTIC POTASH

(see also Dealers)

Grasselli Chem. Co., 1300 Guardian Bldg.,
Cleveland
See page 34.

Harshaw Chem. Co., Cleveland

CAUSTIC POTASH, (Contd.)

Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.

Niagara Alkali Co., 15 E. 41st St., N.Y. (Mfrs.)
See page 46.

Roessler & Hasslacher Chem. Co.,
350-5th Ave., N.Y.

E. M. Sergeant Co., 350-5th Ave., N.Y.

Solvay Sales Corp., 61 Broadway, N.Y.
(Mfrs. liquid) See page 56.

Truemper, Faesey & Besthoff,
22 E. 40th St., N.Y.

Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.

L. A. Salomon & Bro., 216 Pearl St., N.Y.
Tamms Silica Co., 228 N. La Salle St., Chicago
Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

CHAMOIS

Allied Industrial Prods. Co.,
17 N. Elizabeth St., Chicago

Amer. Sponge & Chamois Co.,
23 Beekman St., N.Y.

Atlas Sponge Co., 291 Church St., N.Y.

Jos. Niehaus Co., 341 W. 4th St., Cincinnati

James H. Rhodes & Co.,
157 W. Austin Ave., Chicago

Schroeder & Tremayne, 500 N. Com'l St.,
St. Louis

CAUSTIC SODA

(see also Dealers)

Belle Alkali Co., Belle, W. Va.

Brown Company, Portland, Me.

Champion Fibre Co., Canton, N. C.

Columbia Alkali Co., 350-5th Ave., N.Y.
See page 25.

Diamond Alkali Co., First Nat'l Bk. Bldg.,
Pittsburgh

Dow Chemical Co., Midland, Mich.
See page 29.

Great Western Electrochemical Co.,
San Francisco

Hooker Electrochemical Co.,
60 E. 42nd St., N.Y. See page 35.

Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.

Kimberley-Clark Paper Co., Neenah, Wis.

Mathieson Alkali Works, 250 Park Ave., N.Y.

Michigan Alkali Co., 10 E. 40th St., N.Y.

Michigan Electrochemical Co.,
Menominee, Mich.

Niagara Alkali Co., 9 E. 41st St., N.Y.
See page 46.

Niagara Smelting Corp., Niagara Falls, N.Y.

Oxford Paper Co., White Mountains, N. H.

Pennsylvania Salt Mfg. Co.,
Widener Bldg., Phila.

Solvay Sales Corp., 61 Broadway, N.Y.
See page 56.

Stauffer Chem. Co., 420 Lexington Ave., N.Y.

Warner Chemical Co., 405 Lexington Ave., N.Y.
See page 64.

CHILLING ROLLS

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

William Garrigue & Co., 9 S. Clinton St.,
Chicago

Houchin Machinery Co., Hawthorne, N. J.

Huber Machine Co., 265-46th St., Brooklyn

J. M. Lehmann Co., 248 W. Broadway, N.Y.
See page 39.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

Proctor & Schwartz, 7th St. & Tabor Rd.,
Philadelphia See page 51.

C. G. Sargent's Sons Corp., Graniteville, Mass.
See page 53.

CHINA CLAY (see CLAYS)**CHIPPERS**

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

Houchin Machinery Co., Hawthorne, N. J.

Huber Machine Co., 265-46th St., Brooklyn

J. M. Lehmann Co., 248 W. Broadway, N.Y.
See page 39.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

CHIP SOAPS (Including Flakes)

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.

Cincinnati Soap Co., 7th & Elm Sts., Cincinnati

Colgate-Palmolive-Peet Co., Chicago

Dobbing Soap Mfg. Co., Camden, N. J.

Du Bois Soap Co., Cincinnati, Ohio

Harris Soap Co., Buffalo, N.Y.

Hewitt Soap Co., Dayton, Ohio

Holbrook Mfg. Co., 18th St., Jersey City, N. J.

Holman Soap Co., 3100 Fox St., Chicago, Ill.

Lever Bros. Co., Cambridge, Mass.

Los Angeles Soap Co., Los Angeles, Calif.

Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.

National Milling & Chem. Co., Manayunk, Phil.

National Soap Co., 357 South 25th St.,
Tacoma, Wash.

Procter & Gamble Co., Cincinnati

J. T. Robertson Co., 147 Richmond Ave.,
Syracuse, N. Y.

Geo. Schmidt Co., 236 W. North Ave.,
Chicago, Ill.

M. Werk Co., Cincinnati

Allen B. Wrisley Co., 6801 W. 65th St., Chicago

Chas. W. Young & Co., Phila.

CEDAR LEAF OIL (see ESSENTIAL OILS)**CEDARWOOD OIL (see ESSENTIAL OILS)****CERESIN WAX (see WAXES)****CHALK (Calcium Carbonate)**

H. J. Baker & Bro., 271 Madison Ave., N.Y.

Binney & Smith Co., 41 E. 42nd St., N.Y.

Chas. B. Chrystal Co., 11 Park Pl., N.Y.

A. C. Drury & Co., 219 North East Water St.,
Chicago See page 31.

Fezandie & Sperrle, 205 Fulton St., N.Y.

E. Fougera & Co., 41 Maiden Lane, N.Y.

Goris & Arnstein, 37th & Racine Ave., Chicago

Hammill & Gillespie, 225 Broadway, N.Y.

Industrial Chem. Sales Co., 230 Park Ave., N.Y.

Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.

Jungmann & Co., 157 Chambers St., N.Y.

CHLORINE

Diamond Alkali Co., First Nat'l Bk. Bldg., Pittsburgh, Pa.
Electro Bleaching Gas Co., 9 E. 41st St., N.Y.
 See page 46.
Grasselli Chem. Co., 1300 Guardian Bldg., Cleveland
 See page 34.
Hoover Electrochemical Co., 60 E. 42nd St., N.Y.
 See page 35.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Mathieson Alkali Works, 250 Park Ave., N.Y.
 Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Niagara Alkali Co., 9 E. 41st St., N.Y.
 See page 46.
 Pennsylvania Salt Mfg. Co., Widener Bldg., Phila.
Solvay Sales Corp., 61 Broadway, N.Y.
 See page 56.
Warner Chemical Co., 405 Lexington Ave., N.Y.
 See page 64.

CHLORINE DISINFECTANTS (see DISINFECTANTS)**CHLOROFORM**

Brown Company, Portland, Me.
Dow Chemical Co., Midland, Mich.
 See page 29.
E. I. du Pont de Nemours & Co., Wilmington, Del.
 See page 4.
Grasselli Chem. Co., 1300 Guardian Bldg., Cleveland
 See page 34.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Mallinckrodt Chemical Works, St. Louis, Mo.
Merck & Co., Rahway, N.J.
 See page 44.
 Niagara Smelting Corp., Niagara Falls, N.Y.
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.

CHLOROPHYLL

Wm. Benkert & Co., 100 Gold St., N.Y.
 See page 19.
 Antoine Chiris Co., 147 Waverly Pl., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
 See page 30.
 Harshaw Chemical Co., 1945 E. 97th St., Cleveland
 Interstate Color Co., 5 Beekman St., N.Y.
Jungmann & Co., 157 Chambers St., N.Y.
Krembs & Co., 669 W. Ohio St., Chicago
Geo. Lueders & Co., 427 Washington St., N.Y.
 See page 40.
 Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
Merck & Co., Rahway, N.J.
 See page 44.
 Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y.
 See page 52.
 R. F. Revson Co., 91-7th Ave., N.Y.
 Edwin Seebach Co., 912 Broadway, N.Y.
Ungerer & Co., 13 W. 20th St., N.Y.
 See page 61.
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y.
 See inside back cover.

CITRAL (see AROMATIC CHEMICALS)**CITRONELLAL (see AROMATIC CHEMICALS)****CITRONELLA OIL (see ESSENTIAL OILS)****CITRONELLOL (see AROMATIC CHEMICALS)****CLEANING COMPOUNDS (see also WASHING COMPOUNDS)**

Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.
Columbia Soap & Chem. Co., Inc., 217-221 Clara St., San Francisco
Continental Car-Na-Var Corp., Brazil, Ind.
Creco Co., Inc., Creco Bldg., Long Island City, N.Y.
Crystal Labs., Inc., 21 W. Park Way, N. E., Pittsburgh, Pa.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
B. R. Elk & Co., Garfield, N.J.
Fuld Bros., 2308 Frederick Ave., Baltimore
Hockwald Chem. Co., 30 Bluxome St., San Francisco
R. M. Hollingshead, 840 Cooper St., Camden, N.J.
Hull Co., 305 Washington St., Brooklyn
International Metal Polish Co., Indianapolis, Ind.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Koppers Products Co., Koppers Bldg., Pittsburgh
 See page 37.
Los Angeles Soap Co., Los Angeles, Calif.
Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.
Marshall Prods., Inc., 806 N. 1st St., St. Louis
Nat'l Milling & Chem. Co., Manayunk, Phila.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Pacific Chem. Co., 1421 N. Main St., Los Angeles
Palmer Products, Inc., Waukesha, Wis.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Peck's Prod. Co., 5224 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanico Chemical Corp., 611 Broadway, N.Y.
Selig Co., 336 Marietta St., Atlanta, Ga.
Solshine Mfg. Co., 17 Caldwell St., Boston
John T. Stanley Co., 640 W. 30th St., N.Y.
Stevens Soap Corp., 200 Sullivan St., Bklyn.
Trojan Prods. Co., 3101 S. Wabash Ave., Chgo.
United Cleanser Mfg. Co., Cambridge, Mass.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
White Tar Co., Kearny, N.J.
 See page 37.
 Jacques Wolf & Co., Passaic, N.J.

CLAYS

Chas. B. Chrystal Co., 11 Park Pl., N.Y.
A. C. Drury & Co., 219 North East Water St., Chicago
 See page 31.

CLAYS, (Contd.)

Fezandie & Sperrle, 205 Fulton St., N.Y.
 E. Fougera & Co., 41 Maiden Lane, N.Y.
 Goris & Arnstein, 37th & Racine Ave., Chgo.
 Hammill & Gillespie, 225 Broadway, N.Y.
 J. M. Huber, Inc., 460 W. 34th St., N.Y.
 Illinois Silica Co., Cairo, Ill.
 Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.

International Silica Co., Cairo, Ill.
 National Sales Corp., 33 E. 13th St., Cinn.
 Owyhee Chemical Products Co.,
 300 W. Adams St., Chicago
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.
 Peerless Clay & Mineral Co., Pueblo, Colo.
 Pylam Products Co., 799 Greenwich St., N.Y.
 L. A. Salomon & Bro., 216 Pearl St., N.Y.
 Tamms Silica Co., 228 N. La Salle St., Chicago
 Whittaker, Clark & Daniels, 246 Front St., N.Y.
 Wishnick-Tumpeir, Inc., 253 Front St., N.Y.

CLIPS (for Collapsible Tubes) (see also TUBES, COLLAPSIBLE)

Acme Clip & Mfg. Co., 426 S. Clinton St.,
 Chicago
 George G. Rodgers Co., 25 Church St., N.Y.

CLOSURES (see CAPS, CORKS, etc.)**CLOVE OIL (see ESSENTIAL OILS)****COAL TAR DISINFECTANTS (see DISINFECTANTS)****COCOA BUTTER**

Walter Baker & Co., 159 Franklin St., N.Y.
 Durkee Famous Foods, Inc., 2670 Elston Ave.,
 Chicago
 Spencer Kellogg & Sons, Buffalo, N.Y.
 A. N. Stollwerck Co., Camden, N.J.

COCONUT OIL

(*see also* Brokers and Dealers)

Atkins, Kroll & Co., 250 California St.,
 San Francisco
 Balfour, Guthrie & Co., 67 Wall St., N.Y.
 Best Foods, Inc., 88 Lexington Ave., N.Y.
 Capital City Products Co., Columbus, O.
 Durkee Famous Foods, Inc., 2670 Elston Ave.,
 Chicago
 Franklin Baker Co., 1500 Bloomfield St.,
 Hoboken, N. J.
 Spencer Kellogg & Sons, Buffalo, N.Y.
 Los Angeles Soap Co., Los Angeles, Calif.
 Philippine Mfg. Co., 244 Calle David,
 Manila, P. I.
 Procter & Gamble Co., Cincinnati, O.
Rayner & Stonington, 79 Wall St., N.Y.
 See inside back cover.
Smith-Weihman Co., 15 Moore St., N.Y.
 See page 54.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
 See inside back cover.

Wilbur-Ellis & Redding Co.,
17 Battery Pl., N.Y.

See page 65.

COCOANUT OIL SOAPS (Hard Water Soaps)

Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.

Cincinnati Soap Co., Cincinnati, O.
 Harley Soap Co., 2832 E. Pacific St.,
 Phila., Pa.

Hewitt Soap Co., Dayton, Ohio
 Hochwald Chem. Co., 30 Bluxome St., San
 Francisco
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Jansen Soap & Chemical Co., 324 Leavenworth
 St., San Francisco, Cal.

H. Kohnstamm & Co., 91 Park Pl., N.Y.
 Lightfoot Schultz Co., Hoboken, N.J.
 Los Angeles Soap Co., Los Angeles, Calif.
 Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.
 Marshall Prods., Inc., 806 N. 1st St., St. Louis
 National Milling & Chem. Co.,
 Manayunk, Phila.

National Soap Co., 357 South 25th St.,
 Tacoma, Wash.

Newell Gutradt Co., 350 Fremont St.,
 San Francisco, Cal.

North Coast Soap & Chem. Works,
 Seattle, Wash.

Pacific Chem. Co., 1421 N. Main St.,
 Los Angeles

Peck's Prod. Co., 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago

Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago

Vliet Soap Co., 638 Monroe St., Brooklyn
 M. Werk Co., St. Bernard, Cincinnati
 Allen B. Wriley Co., 6801 W. 65th St.,
 Chicago, Ill.

Chas. W. Young & Co., Phila.

COLLAPSIBLE TUBES (see TUBES, COLLAPSIBLE)**COLORS (see SOAP COLORS, DEODORIZING BLOCK COLORS, ETC.)****COMPOUND CRESOL SOLUTIONS (see CRESOL COMPOUND; DISINFECTANTS, COAL-TAR)****COMPRESSORS (Air)**

Abbe Engineering Co., 50 Church St., N.Y.
 Beach-Russ Co., 50 Church St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Crowell Mfg. Co., 177 Clifton Pl., Bklyn.
 De Vilbiss Co., Toledo, O.
 Fairbanks-Morse & Co.,
 900 S. Wabash Ave., N.Y.
 Foster Pump Works, 50 Washington St., Bklyn.
 Ingersoll-Rand Co., 11 Broadway, N.Y.
 Nash Engineering Co., South Norwalk, Conn.
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
 See page 45.

Worthington Pump & Machinery Corp.,
 115 Broadway, N.Y.

CONSULTANTS

Entomological Testing Labs.,
114 E. 32nd St., N.Y. See page 49.
Lloyd A. Hall, 1415 W. 37th St., Chicago
Illinois Chemical Labs., 1164 W. 22nd St.,
Chicago
La Wall & Harrison, 214 S. 12th St., Phila.
Pease Laboratories, 39 W. 38th St., N.Y.
Samuel P. Sadtler & Son, 210 S. 13th St., Phila.
Seil, Putt & Rusby, 16 E. 34th St., N.Y.
Skinner & Sherman, 246 Stuart St., Boston
Foster D. Snell, 305 Washington St., Brooklyn
Stilwell & Gladding, 80 West St., N.Y.
Wurster & Sanger, 5201 Kenwood Ave., Chgo.

CONTAINERS, SHIPPING (see BOXES)**CONVEYORS**

Bailey-Buruss Co., Atlanta, Ga.
H. W. Caldwell & Son Co., 2410 W. 18th St.,
Chicago
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Dow Co., 1025 Franklin St., Louisville, Ky.
Wm. Garrigue & Co., 9 S. Clinton St., Chicago
B. F. Gump Co., 431 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
Jeffrey Mfg. Co., 924 N. 4th St., Columbus, O.
Karl Kiefer Machine Co., Cincinnati
Lancaster Iron Works, Lancaster, Pa.
Link-Belt Co., 910 S. Michigan, Chicago
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.
Pneumatic Scale Corp., Norfolk Downs, Mass.
See page 48.
George S. Rodgers Co., 183 Varick St., N.Y.
Standard Conveyor Co., N. St. Paul, Minn.
Sterns Conveyor Co., Cleveland
F. J. Stokes Machine Co., Tabor Rd., Phila., Pa.

COPPER SULFATE (Blue Vitriol)

Dow Chemical Co., Midland, Mich. See page 29.
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
General Chem. Co., 40 Rector St., N.Y. See page 32.
Grasselli Chemical Co., 1300 Guardian Bldg.,
Cleveland See page 34.
Harshaw Chemical Co., 1945 E. 97th St.,
Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.
Nichols Copper Co., 25 Broad St., N.Y.
Raritan Copper Wks., Perth Amboy, N. J.
E. M. Sergeant Co., 350-5th Ave., N.Y.
Tennessee Copper Co., 61 Broadway, N.Y.
Truempy, Faesy & Besthoff, Inc.,
22 E. 40th St., N.Y.

CORKING MACHINERY

Karl Kiefer Machine Co., Cincinnati
Pneumatic Scale Corp., Norfolk Downs, Mass.
See page 48.

CORKS

Armstrong Cork & Insulation Co.,
Lancaster, Pa.
Cork Import Corp., 345 W. 40th St., N.Y.

CORIANDER OIL (see ESSENTIAL OILS)**CORN OIL**

(see also *Brokers and Dealers*)
American Maize Prods. Co.,
41 E. 42nd St., N.Y.
Balfour, Guthrie & Co., Ltd., 67 Wall St., N.Y.
Corn Products Refining Co.,
17 Battery Pl., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave.,
Chicago
Early & Daniel Co., Ingalls Bldg., Cincinnati
Otto A. C. Hagen Co., Public Ledger Bldg.,
Phila.
Spencer Kellogg & Sons, Buffalo, N.Y.
Rayner & Stonington, 79 Wall St., N.Y.
See inside back cover.
Staley Sales Corp., Decatur, Ill.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.
G. A. Wharry & Co., 15 Moore St., N.Y.
Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
See page 65.
Woolner & Co., Peoria, Ill.

COSMETICS (Compacts, Lipsticks, etc.)

Amer. Perfumers Labs., 151 W. 19th St., N.Y.
Hull Co., 305 Washington St., Brooklyn
Luxor, Ltd., 1355 W. 31st St., Chicago
Oxbyn Co., 154-11th Ave., N.Y.
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago
Julius Schmid, Inc., 423 W. 55th St., N.Y.
Shores Co., Cedar Rapids, Ia.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

COTTONSEED FATTY ACIDS (and

Soapstock)
(see also *Brokers and Dealers*)
Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.
Asperegn & Co., Prod. Exchg., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave.,
Chicago
Otto A. C. Hagen Co., Public Ledger Bldg.,
Phila.
Spencer Kellogg & Sons, Buffalo, N.Y.
Portsmouth Cotton Oil Refining Co.,
Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
Rayner & Stonington, 79 Wall St., N.Y.
See inside back cover.
Southern Cotton Oil Co.,
Produce Exchange, N.Y.
Wecoline Products Co., 15 E. 26th St., N.Y.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.
Wilson-Martin Co., Swanson St., Phila.

COTTONSEED OIL*(see also Brokers and Dealers)*

Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
 Spencer Kellogg & Sons, Buffalo, N.Y.
 Los Angeles Soap Co., Los Angeles, Calif.
 Portsmouth Cotton Oil Refining Corp., Portsmouth, Va.
 Procter & Gamble Co., Cincinnati, O.
 Rayner & Stonington, 79 Wall St., N.Y.

See inside back cover.

C. F. Simonin's Sons, Phila.
 Southern Cotton Oil Co., Produce Exchange, N.Y.
 Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y.

See inside back cover.

Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.

*See page 65.***COUMARIN***(see also Aromatic Chemicals)*

Dow Chemical Co., Midland, Mich.

See page 29.

Maywood Chem. Wks., Maywood, N.J.
 Monsanto Chemical Works, 1724 S. 2nd St., St. Louis

CREOSOTE OIL

Barrett Company, 40 Rector St., N.Y.

See page 18.

Wm. Cooper & Nephews, 1909 Clinton Ave., Chicago
 Dominion Tar & Chemical Co., Ltd., 430 Canada Cement Bldg., Montreal, Canada
 William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
 Kentucky Color & Chem. Co., Louisville, Ky.
 Koppers Prods. Co., Koppers Bldg., Pittsburgh, Pa.

See page 37.

Reilly Tar & Chem. Co., Indianapolis
 White Tar Co., Kearny, N.J.

*See page 37.***CRESOL COMPOUND, U.S.P. and Technical**

Baird & McGuire, Inc., Holbrook, Mass.

See page 16.

Chemical Compounding Corp., 262 Huron St., Brooklyn

Chemical Supply Co., 2450 Canal Road, Cleveland

Clifton Chem. Co., 246 Front St., N.Y.

See page 24.

Creco Co., Inc., Creco Bldg., Long Island City, N.Y.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

Fuld Bros., 2308 Frederick Ave., Baltimore

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chem. Co., 30 Bluxome St., San Francisco

Innis, Speiden & Co., 117 Liberty St., N.Y.

See page 36.

Wm. E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn, N.Y.

Koppers Prods. Co., Koppers Bldg., Pittsburgh, Pa.

See page 37.

Mallinckrodt Chemical Works, St. Louis

McLaughlin Gormley King Co., Minneapolis, Minn.

Merck & Co., Rahway, N.J.

See page 44.

North Coast Chem. & Soap Wks., Seattle, Wash.

Pacific Chemical Co., 1421 Main St., Los Angeles
 Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
 Seacoast Labs., 156 Perry St., N.Y.
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Shores Co., Cedar Rapids, Ia.
 U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
 White Tar Co., Kearny, N.J.

*See page 37.***CRESOLS**

American-British Chem. Supplies, 180 Madison Ave., N.Y.

See page 10.

American Cyanamid & Chem. Corp., 535 - 5th Ave., N.Y.

See page 11.

Baird & McGuire, Holbrook, Mass.

See page 16.

Barrett Company, 40 Rector St., N.Y.

See page 18.

Innis, Speiden & Co., 117 Liberty St., N.Y.

See page 36.

William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn

Koppers Prods. Co., Koppers Bldg., Pittsburgh, Pa.

See page 37.

Monsanto Chemical Works, 1724 S. 2nd St., St. Louis

White Tar Co., Kearny, N.J.

*See page 37.***CRESYLIC ACID**

American-British Chem. Supplies, 180 Madison Ave., N.Y.

See page 10.

American Cyanamid & Chem. Corp., 535 - 5th Ave., N.Y.

See page 11.

Baird & McGuire, Holbrook, Mass.

See page 16.

Barrett Co., 40 Rector St., N.Y.

See page 18.

Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago

E. I. Du Pont de Nemours & Co., Wilmington, Del.

See page 4.

Otto A. C. Hagen Co., Public Ledger Bldg., Phila.

Innis, Speiden & Co., 117 Liberty St., N.Y.

See page 36.

William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn

Koppers Prods. Co., Koppers Bldg., Pittsburgh, Pa.

See page 37.

Monsanto Chemical Works, 1724 S. 2nd St., St. Louis

Reilly Tar & Chem. Co., Indianapolis

White Tar Co., Kearny, N.J.

*See page 37.***CRUTCHERS**

Consolidated Prods. Co., 15 Park Row, N.Y.

(Used) See page 26.

Houchin Machinery Co., Hawthorne, N.J.

Huber Machine Co., 265-46th St., Brooklyn

Littleford Bros., 443 E. Pearl St., Cincinnati

Newman Tallow & Soap Machinery Co.,

1051 W. 35th St., Chicago

See page 45.

Patterson Foundry & Machine Co.,

East Liverpool, Ohio

Sowers Mfg. Co., 1296 Niagara St., Buffalo, N.Y.

Struthers-Wells Co., Warren, Pa.

CUTTING TABLES

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Houchin Machinery Co., Hawthorne, N.J.
Huber Machine Co., 265-46th St., Brooklyn
J. M. Lehmann Co., 248 W. B'way, N.Y.
See page 39.
Newman Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago See page 45.
Stein-Brill Corp., 183 Varick St., N.Y. (Used)

CYMENE

Brown Co., Portland, Me.
Industrial Chem. Sales Co., 230 Park Ave., N.Y.

DEAD OIL, see CREOSOTE OIL**DEALERS (Chemicals)**

American Oil & Supply Co., 236 Wilson Ave., Newark, N. J.
Baker & Gaffney, Drexel Bldg., Philadelphia
H. J. Baker & Bro., 271 Madison Ave., N.Y.
Barada & Page, Kansas City, Mo.
Benner Chemical Co., 298 S. La Salle St., Chicago
Braun-Knecht-Heimann Co., 584 Mission St., San Francisco
Buckeye Soda Products Co., 32 Main St., Cincinnati
Consumers Chemical Co., Drexel Bldg., Philadelphia
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Dickerson Co., Drexel Bldg., Phila.
Doe & Ingalls, 198 Milk St., Boston
A. C. Drury & Co., 219 East North Water St., Chicago See page 31.
Eaton Clark Co., 204 Woodward Ave., Detroit
Alex C. Ferguson Co., 24 Oregon Ave., Phila.
Fort Pitt Chemical Co., 3134 Penn Ave., Pittsburgh
Frey & Horgan, 25 Beaver St., N.Y.
Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Globe Chemical Co., Murray Road, Cinn.
Arnold Hoffman & Co., 55 Canal St., Providence, R. I.
Hummel Chemical Co., 90 West St., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.
Jungmann & Co., 157 Chambers St., N.Y.
E. & F. King & Co., 405 Atlantic Ave., Boston
Los Angeles Chem. Co., 2200 Santa Fe Ave., Los Angeles
George Mann & Co., Providence, R. I.
Merchants Chemical Co., 21 East 40th St., N.Y.
1314 South Canal St., Chicago
420 Barclay St., Milwaukee
110-6th St., N. E. Minneapolis
Millard-Heath Co., 214 Pine St., St. Louis
Clarence Morgan & Co., 355 W. Ontario St., Chicago
National Oil & Supply Co.,
170 Frelinghuysen Ave., Newark, N. J.
National Sales Co., 31 E. 13th St., Cinn.

Newman Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago See page 45.
Paper Makers Chemical Corp.,
Kalamazoo, Mich.
H. B. Prior Co., 420 Lexington Ave., N.Y.
R. F. Revson Co., 91-7th Ave., N.Y.
G. S. Robins & Co., 310 S. Commercial St., St. Louis
Rodgers Chemical Co., Fitzimmons Bldg., Pittsburgh
Rohm & Haas Co., Inc.,
222 W. Washington Sq., Phila.
H. J. Rolls Chemical Co., Buffalo, N.Y.
E. M. Sergeant Co., 350-5th Ave., N.Y.
J. U. Starkweather Co., Providence, R. I.
Thompson-Hayward Chem. Co.,
2915 Southwestern Blvd., Kansas City
Arthur C. Trask Co., 4103 S. La Salle St., Chicago, Ill.
Truempy, Fasey & Besthoff, 22 E. 40th St., N.Y.
Jos. Turner & Co., 500-5th Ave., N.Y.C.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y. See inside back cover.

DEALERS (Oils and Fats)

Balfour, Guthrie & Co., 67 Wall St., N.Y.
Douredoure Bros., 227 S. Front St., Phila.
Alex Ferguson Co., 24 Oregon Ave., Phila.
Frey & Horgan, 25 Beaver St., N.Y.
Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
A. W. Harris Oil Co., Providence, R. I.
J. H. Hinz Co., 825 Engineers Bldg., Cleveland
Hummel Chemical Co., 90 West St., N.Y.
Innes & Co., 132 Front St., N.Y.
Miller & Co., 2401 Chestnut St., Philadelphia
Clarence Morgan & Co., 353 W. Ontario St., Chicago
Murray Oil Products Co., 21 West St., N.Y.
Newman Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago, Ill. See page 45.
Paper Makers Chemical Corp.,
Kalamazoo, Mich.
Rayner & Stonington, 79 Wall St., N.Y. See inside back cover.
E. M. Sergeant Co., Empire State Bldg., N.Y.
E. R. Smead Co., Hanna Bldg., Cleveland
Smith-Weihman Co., 15 Moore St., N.Y. See page 54.
Swan & Finch Oil Co., 522-5th Ave., N.Y.
Arthur C. Trask Co., 4103 S. La Salle St., Chicago
Tunley & Co., 12 Water St., N.Y.
Vliet & Co., 638 Monroe St., Brooklyn
Wm. M. Ware & Co., 88 Broad St., Boston
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y. See inside back cover.

DECOLORIZING CARBONS

American Active Carbon Co., Columbus, O.
Cleveland Cliffs Iron Co., Union Trust Bldg., Cleveland
Darco Sales Corp., 45 E. 42nd St., N.Y.

DECOLORIZING CARBON, (Contd.)

Durkee Famous Foods, Inc., 2670 Elston Ave.,
Chicago
Industrial Chem. Sales Co., Inc.,
230 Park Ave., N.Y.
Jennison-Wright Co., Toledo

DEGRAS

Bopf-Whittam Corp., Westfield, N. J.
Hummel Chemical Co., 90 West St., N.Y.
National Oil Products Co., Harrison, N.J.
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
Rayner & Stonington, 79 Wall St., N.Y.
See inside back cover.
Robinson-Wagner Co., 21 West St., N.Y.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.

DEODORIZING BLOCK COLORS

(see also *Perfuming Compounds*)

American Aniline Products, Inc.,
50 Union Sq., N.Y.
Dyestuffs & Chemicals, Inc.,
11th & Monroe Sts., St. Louis
Fezandie & Sperrle, 205 Fulton St., N.Y.
Interstate Color Co., Inc., 5 Beekman St., N.Y.
Leeben Chemical Co., 389 Washington St., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y.
See page 52.
Sandoz Chem. Wks., 61 Van Dam St., N.Y.

DEODORIZING BLOCK DIES (see SOAP DIES)**DEODORIZING BLOCK HOLDERS (see HOLDERS, DEODORIZING BLOCKS)****DEODORIZING BLOCK PERFUMES (see PERFUMING COMPOUNDS)****DEODORIZING BLOCK PRESSES (see PRESSES)****DEODORIZING BLOCKS**

Clifton Chem. Co., Inc., 246 Front St., N.Y.
See page 24.

Columbia Soap & Chem. Co., Inc.,
217-221 Clara St., San Francisco
Creco Co., Inc., Creco Bldg.,
Long Island City, N.Y.
Crystal Labs., Inc., 21 W. Park Way, N. E.,
Pittsburgh, Pa.
Eagle Soap Co., 25 E. Jackson Blvd., Chicago
B. R. Elk & Co., Garfield, N.J.
Elkay Prods. Corp., 542-1st Ave., N.Y.
Fuld Bros., 2308 Frederick Ave., Baltimore
Goulard & Olena, 140 Liberty St., N.Y.
Hockwald Chemical Co., 30 Bluxome St.,
San Francisco
Jansen Soap & Chem. Co., 324 Leavenworth St.,
San Francisco, Cal.
Kay Chemical Co., 329 Ringold St., Baltimore
Koppers Products Co., Koppers Bldg.,
Pittsburgh
Marshall Prods., Inc., 806 N. 1st St., St. Louis
Pacific Chem. Co., 1421 N. Main St.,
Los Angeles
Palmer Prod., Inc., Waukesha, Ill.
Peck's Products Co., 5224 N. 2nd St., St. Louis
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Royal Chem. Co., 208 E. 27th St., N.Y.
Sanico Chemical Corp., 611 Broadway, N.Y.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
Uncle Sam Chem. Co., 359 Cherry St., N.Y.
Vasco Prods. Co., Elmira, N.Y.
White Tar Co. of N. J., Belleville Turnpike,
Kearny, N. J.
See page 37.

KOPPERS PRODS. CO., KOPPERS BLDG., PITTSBURGH, PA.

See page 37.

Marshall Products, Inc., 806 N. 1st St.,

St. Louis

North Coast Soap & Chem. Wks.,
Seattle, Wash.

Palmer Products Inc., Waukesha, Wis.

Puritan Chemical Co., Atlanta, Ga.

Theo. B. Robertson Prods. Co.,

700 W. Division St., Chicago

Royal Chem. Co., 208 E. 27th St., N.Y.

Sanico Chemical Corp., 611 Broadway, N.Y.

Selig Co., 336 Marietta St., Atlanta, Ga.

Solshine Mfg. Co., 17 Caldwell St., Boston

Uncle Sam Chem. Co., 359 Cherry St., N.Y.

U. S. Sanitary Specialties Corp.,

435 S. Western Ave., Chicago

Vasco Prods. Co., Elmira, N.Y.

West Disinfecting Co., Long Island City, N.Y.

White Tar Co., Kearny, N. J. See page 37.

DEODORIZING CRYSTALS

Clifton Chemical Co., 246 Front St., N.Y.

See page 24.

Creco Co., Inc., Creco Bldg.,

Long Island City, N.Y.

Crystal Labs, Inc., 21 W. Park Way, N. E.,
Pittsburgh, Pa.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

B. R. Elk & Co., Garfield, N.J.

Elkay Prods. Corp., 542-1st Ave., N.Y.

Fuld Bros., 2308 Frederick Ave., Baltimore

Goulard & Olena, 140 Liberty St., N.Y.

Hockwald Chem. Co., 30 Bluxome St.,

San Francisco

Jansen Soap & Chem. Co., 324 Leavenworth St.,
San Francisco, Cal.

Kay Chemical Co., 329 Ringold St., Baltimore

Koppers Products Co., Koppers Bldg.,

Pittsburgh See page 37.

Marshall Prods., Inc., 806 N. 1st St., St. Louis

Pacific Chem. Co., 1421 N. Main St.,

Los Angeles

Palmer Prod., Inc., Waukesha, Ill.

Peck's Products Co., 5224 N. 2nd St., St. Louis

Theo. B. Robertson Prods. Co.,

700 W. Division St., Chicago

Royal Chem. Co., 208 E. 27th St., N.Y.

Sanico Chemical Corp., 611 Broadway, N.Y.

U. S. Sanitary Specialties Corp.,

435 S. Western Ave., Chicago

Uncle Sam Chem. Co., 359 Cherry St., N.Y.

Vasco Prods. Co., Elmira, N.Y.

White Tar Co. of N. J., Belleville Turnpike,

Kearny, N. J.

See page 37.

DEODORIZING EQUIPMENT (For Oils)

Edouard Bataille, 40 E. 34th St., N.Y.

Wm. Garrigue & Co., 9 S. Clinton St., Chgo.

Ernest Scott & Co., Fall River, Mass.

Wurster & Sanger, 5201 Kenwood Ave., Chgo.

DERRIS EXTRACT

Wm. Benkert & Co., 100 Gold St., N.Y.

See page 19.

Derris, Inc., 79 Wall St., N.Y.

McCormick & Co., Baltimore, Md.

See page 41.

S. B. Penick & Co., 132 Nassau St., N.Y.

See page 47.

DERRIS ROOT

Wm. Benkert & Co., 100 Gold St., N.Y. See page 19.
 Derris, Inc., 79 Wall St., N.Y.
 J. L. Hopkins & Co., 220 Broadway, N.Y.
 Murray & Nickell Mfg. Co.,
 2808 Arthington St., Chicago
S. B. Penick & Co., 132 Nassau St., N.Y. See page 47.
 Frank B. Ross Co., 79 Wall St., N.Y.
 Halsey E. Silliman Co., 17 State St., N.Y.

DIES (see SOAP DIES)**DIETHANOLAMINE (see ETHANOLAMINE)****DIP OIL**

Baird & McGuire, Holbrook, Mass. See page 16.
Barrett Co., 40 Rector St., N.Y. See page 18.
 Chemical Supply Co., 2450 Canal Rd., Cleveland
Clifton Chemical Co., 246 Front St., N.Y. See page 24.
 Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
 William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Prods. Co., Koppers Bldg., Pittsburgh, Pa. See page 37.
 McLaughlin Gormley King Co., Minneapolis, Minn.
White Tar Co., Kearny, N. J. See page 37.

DIPHENYL OXIDE (see AROMATIC CHEMICALS)**DISH WASHING COMPOUNDS (see WASHING COMPOUNDS)****DISINFECTANTS, CHLORINATED**

Baird & McGuire, Inc., Holbrook, Mass. See page 16.
 Chemical Compounding Corp., 262 Huron St., Brooklyn
 Chemical Supply Co., 2450 Canal Rd., Cleveland
 Creco Co., Inc., Creco Bldg., Long Island City, N.Y.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 B. R. Elk & Co., Garfield, N.J.
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Hockwald Chem. Co., 30 Bluxome St., San Francisco, Cal.
 Kay Chemical Co., 329 Ringold St., Baltimore
 Mathieson Alkali Works, 250 Park Ave., N.Y.
 McLaughlin Gormley King Co., Minneapolis, Minn.
Merck & Co., Rahway, N. J. See page 44.
 Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
 North Coast Soap & Chem. Works, Seattle, Wash.
 Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
 Sanico Chemical Corp., 611 Broadway, N.Y.
 Sherwin-Williams Co., 601 Canal Rd., Cleveland
 U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

DISINFECTANTS, COAL TAR

American Cyanamid & Chem. Corp.
 535 - 5th Ave., N.Y. See page 11.
 Baird & McGuire, Inc., Holbrook, Mass. See page 16.
 Chemical Compounding Corp., 262 Huron St., Brooklyn
 Chemical Supply Co., 2450 Canal Rd., Cleveland
Clifton Chemical Co., 246 Front St., N.Y. See page 24.
 Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
 Creco Co., Inc., Creco Bldg., Long Island City, N.Y.
 C. B. Dolge Co., Westport, Conn.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 B. R. Elk & Co., Garfield, N.J.
 Ferguson Laboratories, 24 Oregon Ave., Phila.
 Fuld Bros., 2308 Frederick Ave., Baltimore
 James Good, Inc., 2110 E. Susquehanna Ave., Phila.
 Goulard & Olena, 140 Liberty St., N.Y.
 Harley Soap Co., 2832 E. Pacific St., Phila.
 Hockwald Chem. Co., 30 Bluxome St., San Francisco
 William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
 Kay Chemical Co., 329 Ringold St., Baltimore
Koppers Prods. Co., Koppers Bldg., Pittsburgh See page 37.
 McLaughlin Gormley King Co., 1715 Fifth St., S. E., Minneapolis, Minn.
Merck & Co., Rahway, N. J. See page 44.
 National Oil Products Co., Harrison, N.J.
 Peck's Products Co., 5224 N. 2nd St., St. Louis
 Reilly Tar & Chemical Co., Merchants Bank Bldg., Indianapolis
 Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
 Rochester Germicide Co., Rochester, N.Y.
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Sherwin-Williams Co., 601 Canal Rd., Cleveland, Ohio
 Shores Co., Cedar Rapids, Ia.
 U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
 Vliet & Co., 638 Monroe St., Brooklyn
 West Disinfecting Co., Long Island City, N.Y.
 Robert C. White Co., Falls of Schuylkill, Phila.
White Tar Co., Kearny, N. J. See page 37.

DISINFECTANTS, PINE OIL

Baird & McGuire, Inc., Holbrook, Mass. See page 16.
 Chemical Compounding Corp., 262 Huron St., Bklyn.
 Chemical Supply Co., 2450 Canal Rd., Cleveland
Clifton Chemical Co., 246 Front St., N.Y. See page 24.
 Columbia Soap & Chem. Co., 217 Clara St., San Francisco
 Continental Car-Na-Var Corp., Brazil, Ind.
 Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
 Creco Co., Inc., Creco Bldg., Long Island City, N.Y.
 C. B. Dolge Co., Westport, Conn.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 B. R. Elk & Co., Garfield, N.J.
 Elkay Prods. Corp., 542-1st Ave., N.Y.

DISINFECTANTS, PINE OIL, (Contd.)

Ferguson Labs., 24 Oregon Ave., Phila.
 Fuld Bros., 2308 Frederick Ave., Baltimore
 James Good, Inc., 2110 E. Susquehanna Ave.,
 Phila.
 Goulard & Olena, 140 Liberty St., N.Y.
 Harley Soap Co., 2832 E. Pacific St., Phila.
 Hockwald Chem. Co., 30 Bluxome St.,
 San Francisco
 Jansen Soap & Chem. Co., 324 Leavenworth St.,
 San Francisco, Cal.
 Kay Chemical Co., 329 Ringold St., Baltimore
 Koppers Products Co., Koppers Bldg.,
 Pittsburgh See page 37.
 Marshall Products, Inc., 806 N. 1st St., St. Louis
 McLaughlin Gormley King Co.,
 Minneapolis, Minn.
 National Oil Products Co., Harrison, N.J.
 Pacific Chem. Co., 1421 N. Main St.,
 Los Angeles
 Palmer Prods., Inc., Waukesha, Wis.
 Peck's Prod. Co., 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Seacoast Labs., 156 Perry St., N.Y.
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Sherwin-Williams Co., 601 Canal Rd.,
 Cleveland, O.
 Shores Co., Cedar Rapids, Ia.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 West Disinfecting Co., Long Island City, N.Y.
 Robert C. White Co., Falls of Schuylkill, Phila.
 White Tar Co., Kearny, N. J. See page 37.

DISPENSERS, Liquid Soap (see SOAP DISPENSERS)**DRAIN PIPE SOLVENTS**

Clifton Chemical Co., 246 Front St., N.Y.
 Creco Co., Inc., Creco Bldg.,
 Long Island City, N.Y.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 B. R. Elk & Co., Garfield, N.J.
 Fuld Bros., 2308 Frederick Ave., Baltimore
 James Good, Inc., 2110 Susquehanna Ave.,
 Phila.
 Goulard & Olena, 140 Liberty St., N.Y.
 Hockwald Chem. Co., 30 Bluxome St.,
 San Francisco
 Hull Co., 305 Washington St., Brooklyn
 Mechling Bros. Chemical Co.,
 Line St. & Coopers Creek, Camden, N.J.
 North Coast Chem. & Soap Wks.,
 Seattle, Wash.
 Palmer Products, Inc., Waukesha, Wis.
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Sanico Chemical Corp., 611 Broadway, N.Y.
 Swann Chem. Co., 420 Lexington Ave., N.Y. See page 60.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago

DRIP MACHINES

Clifton Chem. Co., 246 Front St., N.Y. See page 24
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

Hockwald Chem. Co., 30 Bluxome St.,
 San Francisco
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Rochester Germicide Co., 16 Dowling Pl.,
 Rochester, N.Y.
 Sanitary Supplies Co., P. O. Box 5208, Phila.
 William Vogel & Bros., 37 S. 9th St., Brooklyn

DRUM FILLING MACHINERY (see FILLING MACHINERY, DRUMS)**DRUM WASHERS (see WASHING MACHINERY, DRUMS)****DRUMS, Fibre (see BARRELS, FIBRE)****DRUMS, Steel (see BARRELS, STEEL)****DRYERS, CHIP SOAP and BARS**

Buck Dryer Corp., Manchester, Conn.
 Consolidated Prods. Co., 15 Park Row, N.Y. See page 26.
 (Used)
 Houchin Machinery Co., Hawthorne, N. J.
 Huber Machine Co., 265-46th St., Brooklyn
 J. M. Lehmann Co., 248 W. Broadway, N.Y. See page 39.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used) See page 45.
 Proctor & Schwartz, 7th St. & Tabor Rd.,
 Philadelphia
 C. G. Sargent's Sons, Graniteville, Mass. See page 53.

DRYING MACHINERY (General)

C. O. Bartlett & Snow Co., Cleveland
 Buck Dryer Corp., Manchester, Conn.
 Buckeye Dryer Co., 131 W. Lake St., Chicago
 Buffalo Forge Co., 490 Broadway, Buffalo, N.Y.
 Buffalo Foundry & Machine Co., Buffalo, N.Y.
 Gordon Davis Engineering Co.,
 21 E. 40th St., N.Y.
 Drying Systems, Inc., 1800 Foster Ave., Chicago
 Ellis Dryer Co.,
 Roosevelt Road & Talman Ave., Chicago
 B. F. Gump Co., 431 S. Clinton Ct., Chicago
 Houchin Machinery Co., Hawthorne, N. J.
 Lancaster Iron Works, Lancaster, Pa.
 J. M. Lehmann Co., 248 W. Broadway, N.Y. See page 39.
 Louisville Drying Equipment Co.,
 Louisville, Ky.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used) See page 45.

Oven Equipment Co., New Haven, Conn.
 Philadelphia Drying Mach. Co., Philadelphia
 Proctor & Schwartz, 7th St. & Tabor Rd.,
 Philadelphia
 C. G. Sargent's Sons Corp.,
 Graniteville, Mass. See page 53.
 Ernest Scott & Co., Fall River, Mass.
 Stein-Brill Corp., 183 Varick St., N.Y. (Used)
 F. J. Stokes Machine Co., Philadelphia, Pa.
 Struthers-Wells Co., Warren, Pa.
 B. F. Sturtevant Co., Hyde Park, Boston

DRY CLEANING SOAPS

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.

Beltine Chem. & Mfg. Co.,
6155 Wentworth Ave., Chicago

Cincinnati Soap Co., Cincinnati

Clifton Chemical Co., 246 Front St., N.Y.
See page 24.

Davies Young Soap Co., Dayton, O.
See page 28.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

J. Eavenson & Sons, Del. & Penn Sts.,
Camden, N. J.

Force Prods. Co., Chicago

Fuld Bros., 2308 Frederick Ave., Baltimore

Harley Soap Co., 2832 E. Pacific St., Phila.

Hull Co., 305 Washington St., Brooklyn

Kleen-Rite Mfg. Co., 1517 Washington,
St. Louis

H. Kohnstamm & Co., 91 Park Pl., N.Y.

Kranich Soap Co., 54 Richards St., Brooklyn

Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.

Midland Chem. Labs., Dubuque, Ia.

North Coast Chem. & Soap Wks.,
Seattle, Wash.

Peck's Prod. Co., 5224 N. 2nd St., St. Louis

Riverside Mfg. Co., 4919 Conn St., St. Louis

J. T. Robertson Co., 147 Richmond Ave.,
Syracuse, N.Y.

John T. Stanley Co., 640 W. 30th St., N.Y.

Ultra Chem. Wks., Inc., Kitay Bldg.,
Paterson, N. J.

U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

M. Werk Co., St. Bernard, Cincinnati

EMULSIFYING AGENTS

Arabol Mfg. Co., 110 E. 42nd St., N.Y.

Carbide & Carbon Chemicals Corp.,
30 E. 42nd St., N.Y.

A. C. Drury & Co., 219 North East Water St.,
Chicago
See page 31.

Hull Co., 305 Washington St., Bklyn.

Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.

Marshall Products, Inc., 806 N. 1st St., St. Louis

National Oil Products Co., Harrison, N.J.

Pylam Products Co., 799 Greenwich St., N.Y.
See page 52.

R. F. Revson Co., 91-7th Ave., N.Y.

Richards Chem. Works, 190 Warren St.,
Jersey City, N.J.

Swann Chem. Co., 420 Lexington Ave., N.Y.
See page 60.

Albert Verley, Inc., 11 E. Austin Ave., Chicago

Jacques Wolfe & Co., Passaic, N.J.

ESSENTIAL OILS

van Ameringen-Haebler, Inc.,
315-4th Ave., N.Y.
Irving Bennett & Co., 64 W. 23rd St., N.Y.

Budd Aromatic Chemical Co.,
667 Washington St., N.Y.
See page 22.

W. J. Bush & Co., 11 E. 38th St., N.Y.

Ph. Chaleyer, Inc., 200 Varick St., N.Y.
See page 23.

Antoine Chiris Co., 147 Waverly Pl., N.Y.

Compagnie Duval, 121 E. 24th St., N.Y.

Compagnie Parento, Inc.,
Croton-on-Hudson, N.Y.

Dodge & Olcott Co., 180 Varick St., N.Y.

P. R. Dreyer Inc., 12 E. 12th St., N.Y.
See page 30.

A. C. Drury & Co., 219 East North Water St.,
Chicago, Ill.
See page 31.

Felton Chemical Co., 599 Johnson Ave.,
Brooklyn

Benj. French, Inc., 160-5th Ave., N.Y.

Fritzsche Brothers, Inc., 78 Beekman St., N.Y.

Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.
See page 33.

James B. Horner, Inc., 3 Platt St., N.Y.

Chas. L. Huisking & Co., 155 Varick St., N.Y.

Industrial Organics, 131 E. 45th St., N.Y.

Lautier Fils, 72 Beekman St., N.Y.

Leghorn Trading Co., 155 E. 44th St., N.Y.
See page 38.

Pierre Lemoine, Inc., 200 Varick St., N.Y.

Geo. Lueders & Co., 427 Washington St., N.Y.
See page 40.

Magnus, Mabee & Reynard, 32 Cliff St., N.Y.

J. Manheimer, 10 Greene St., N.Y.

A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.

Hijos de Francisco Navarro,
119 Nassau St., N.Y.

Neumann-Buslee & Wolfe, 224 W. Huron St.,
Chicago

Norda, Inc., 601 W. 26th St., N.Y.

Orbis Products Trading Co., 215 Pearl St., N.Y.

Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.

Riviera Products Co., 215 W. Ohio St., Chicago

H. C. Ryland, Inc., 161 Water St., N.Y.

Edwin Seebach Co., 912 Broadway, N.Y.

Wm. G. Sibbach & Co., 201 S. 2nd Ave.,
Maywood, Ill.

Geo. Silver Import Co., 461-4th Ave., N.Y.

Standard Aromatics, Inc.,
Bush Terminal Bldg. #1, Bklyn., N.Y.

Synfleur Scientific Labs., Monticello, N.Y.

A. M. Todd Co., Kalamazoo, Mich.

George Uhe, 11 Cliff St., N.Y. (Broker)

Ungerer & Co., 13 W. 20th St., N.Y.
See page 61.

United Laboratories, 8 E. 12th St., N.Y.

Van Dyk & Co., 57 Wilkinson Ave.,
Jersey City, N.J.
See page 62.

Albert Verley, Inc., 11 E. Austin Ave., Chicago

ETHANOLAMINE

Carbide & Carbon Chemicals Corp.,
30 E. 42nd St., N.Y.

ETHER

American Solvents & Chem. Corp.,
285 Madison Ave., N.Y.

Carbide & Carbon Chemicals Corp.,
30 E. 42nd St., N.Y.

Chas. Cooper & Co., 194 Worth St., N.Y.

Mallinckrodt Chem. Wks., 3600 N. 2nd St.,
St. Louis

Merck & Co., Rahway, N.J.
See page 44.

Kelly Oil Co., 2534 Madison Ave.,
Kansas City, Mo. (Petroleum)

U. S. Industrial Chem. Co.,
110 E. 42nd St., N.Y.

EUCALYPTUS OIL (see ESSENTIAL OILS)

EVAPORATORS

E. B. Badger & Sons Co., 75 Pitt St., Boston
 Buffalo Foundry & Mach. Co., Buffalo, N.Y.
 Chemical Equipment Co., Montpelier, Ind.
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 William Garrigue & Co., 9 S. Clinton St., Chicago
 Kestner Evaporator Co., 18th St. & Allegheny Ave., Philadelphia
 Lancaster Iron Works, Lancaster, Pa.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
 See page 45.
 Ernest Scott & Co., Fall River, Mass.
 F. J. Stokes Machine Co., Phila., Pa.
 Struthers-Wells Titusville Corp., Warren, Pa.
 Swenson Evaporator Co., Harvey, Ill.
 Wurster & Sanger, 5201 Kenwood Ave., Chicago
 Zaremba Co., Buffalo, N.Y.

FAT SPLITTING REAGENTS

Twitchell Process Co., St. Bernard, Ohio

FATTY ACID PLANTS

William Garrigue & Co., 9 S. Clinton St., Chicago
 Ernest Scott & Co., Fall River, Mass.
 Wurster & Sanger, 5201 Kenwood Ave., Chicago

FATTY ACIDS

(see also *Brokers and Dealers*)

Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Celina Stearic Acid Co., Celina, Ohio
 Darling & Co., 4201 So. Ashland Ave., Chicago
 Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
 Emery Industries, Inc., 4300 Carew Tower, Cincinnati
 A. Gross & Co., Newark, N.J.
 Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
 Industrial Chem. Sales Co., Inc., 230 Park Ave., N.Y.
 Spencer Kellogg & Sons, Buffalo, N.Y.
Leghorn Trading Co., 155 E. 44th St., N.Y.
 See page 38.
 Los Angeles Soap Co., Los Angeles, Calif.
 Procter & Gamble Co., Cincinnati, O.
Rayner & Stonington, 79 Wall St., N.Y.
 See inside back cover.
 Silmo Chemical Co., Vineland, N.J.
 C. F. Simonin's Sons, Tioga & Belgrade Sts., Phila.
 Southern Cotton Oil Co., Produce Exchange, N.Y.
 Swift & Co., Union Stock Yards, Chicago
 Theobald Animal By-Products Refinery, Kearny, N.J.
 Twitchell Process Co., Ivorydale, Ohio
 Wecoline Products, Inc., 15 E. 26th St., N.Y.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
 See inside back cover.
 M. Werk Co., St. Bernard, Cincinnati
Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
 See page 65.
 Wilson-Martin Co., Swanson St., Phila.

FATTY ALCOHOLS, Sulfonated, see
SULFONATED FATTY ALCOHOLS**FELDSPAR**

Foote Mineral Co., 1608 Summer St., Phila.
 Hammill & Gillespie, 225 Broadway, N.Y.
 Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Tamms Silica Co., 228 N. La Salle St., Chgo.

FIBRE CASES (see **BOXES, FIBRE**)**FIBRE CANS** (see **CANS, FIBRE**)**FILLERS**, see **TALC, BENTONITE, CLAYS, ETC.****FILLING MACHINERY** (Flakes)

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 J. L. Ferguson Co., Joliet, Ill.
 B. F. Gump Co., 431 S. Clinton St., Chicago, (Bbls. & Bags)
 S. Howes Co., Silver Creek, N.Y. (Bbls.)
 Johnson Automatic Sealer Co., Ltd.
 Battle Creek, Mich.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
 See page 45.
Pneumatic Scale Corp., Norfolk Downs, Mass.
 See page 48.
 Triangle Package Machinery Co., 910 N. Spaulding Ave., Chicago

FILLING MACHINERY (Liquids, Bottles)

Alsop Engineering Corp., 39 W. 60th St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Karl Kiefer Machine Co., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
 See page 45.
Pneumatic Scale Corp., Norfolk Downs, Mass.
 See page 48.
 U. S. Bottlers Machinery Co., 4025 N. Rockwell St., Chicago
 The Vol-u-Meter Co., 710 Ohio St., Buffalo, N.Y.

FILLING MACHINERY (Liquids, Cans)

Alsop Engineering Corp., 39 W. 60th St., N.Y.
 Buffalo Filling Machinery Co., 27 Mechanic St., Buffalo, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Horix Mfg. Co., Corliss Station, Pittsburgh
 Karl Kiefer Machine Co., Cincinnati
 Mixing Equipment Co., 1024 Garson Ave., Rochester, N.Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
 See page 45.
Pneumatic Scale Corp., Norfolk Downs, Mass.
 See page 48.
 F. J. Stokes Machine Co., Tabor Rd., Philadelphia

**FILLING MACHINERY (Liquids, Cans)
(Contd.)**

U. S. Bottlers Machinery Co.,
4025 N. Rockwell St., Chicago
The Vol-U-Meter Co., 710 Ohio St.,
Buffalo, N.Y.

FILLING MACHINERY (Liquids, Drums)

Alsop Engineering Corp., 39 W. 60th St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Mixing Equipment Co., 1024 Garson Ave.,
Rochester, N.Y.
National Acme Co., E. 131st St. & Coit Ave.,
Cleveland
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.
The Vol-U-Meter Co., 710 Ohio St.,
Buffalo, N.Y.

FILLING MACHINERY (Pastes, Cans)

Buffalo Filling Mch. Co., Ellicott Sq. Bldg.,
Buffalo, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Filler Machine Co., 1250 E. Montgomery St.,
Philadelphia
Karl Kiefer Machine Co., Cincinnati
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.
C. T. Small Mfg. Co., 1204 Ferguson Ave.,
St. Louis, Mo.
Sprague-Sells Corp., 308 W. Washington St.,
Chicago
Stokes & Smith Co., Summerdale, Phila.
See page 59.
F. J. Stokes Mach. Co., Philadelphia
Triangle Package Mchy. Co.,
910 N. Spaulding Ave., Chicago

FILLING MACHINERY (Pastes, Drums)

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.
Stokes & Smith Co., Summerdale, Phila.
See page 59.
The Vol-U-Meter Co., 710 Ohio St.,
Buffalo, N.Y.

FILLING MACHINERY (Pastes, Tubes)

Arthur Colton Co., Detroit, Mich.
Karl Kiefer Machine Co., Cincinnati
George C. Rodgers Co., 183 Varick St., N.Y.
F. J. Stokes Mach. Co., Philadelphia, Pa.

FILLING MACHINERY (Powders)

Consolidated Package Machinery Corp.,
1400 West Ave., Buffalo, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
J. L. Ferguson Co., Joliet, Ill.
B. F. Gump Co., 431 S. Clinton St., Chicago

S. Howes Co., Silver Creek, N.Y. (Bbls.)

Johnson Automatic Sealer Co.,
Battle Creek, Mich.

J. M. Lehmann Co., 248 W. Broadway, N.Y.
See page 39.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.

Pneumatic Scale Corp., Norfolk Downs, Mass.
See page 48.

F. B. Redington Co., 112 S. Sangamon St.,
Chicago

Geo. C. Rodgers Co., 183 Varick St., N.Y.
C. T. Small Mfg. Co., 1204 Ferguson Ave.,
St. Louis

Stokes & Smith Co., Summerdale, Phila.
See page 59.

F. J. Stokes Mach. Co., Philadelphia, Pa.
Triangle Package Machinery Co.,
910 N. Spaulding Ave., Chicago

FILTER CLOTHS

Alsop Engineering Corp., 39 W. 60th St., N.Y.
Asbestos Spinning & Weaving Co.,
16 Beaver St., N.Y.
Cleveland Wire Cloth & Mfg. Co.,
3574 E. 78th St., Cleveland
B. F. Gump Co., 431 S. Clinton St., Chicago
Wm. E. Hooper & Sons Co.,
Juniper & Cherry Sts., Philadelphia
Independent Filter Press Co., 418-3rd Ave.,
Brooklyn
National Filter & Cloth Weaving Co.,
134 Broadway, N.Y.
Newark Wire Cloth Co., 223 Verona Ave.,
Newark, N. J.
Oliver United Filters, Inc.,
33 W. 42nd St., N.Y.
J. T. Perkins Co., 669 Kent Ave., Brooklyn
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
T. Shriver & Co., Harrison, N. J.
D. R. Sperry & Co., Batavia, Ill.

FILTER PAPER

Alsop Engineering Corp., 39 W. 60th St., N.Y.
H. Reeve Angel & Co., 7 Spruce St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y. See page 30.
A. C. Drury & Co., 219 East North Water St., Chicago See page 31.
August Giese & Son, 162 William St., N.Y.
Karl Kiefer Machine Co., Cincinnati, O.
Geo. Lueders & Co., 427 Washington St., N.Y. See page 40.
Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
J. Manheimer, 10 Greene St., N.Y.
Neumann-Buslee & Wolfe, Inc.,
224 W. Huron St., Chicago
Palo Co., 153 W. 23rd St., N.Y.

FILTER PRESSES

Alsop Engineering Corp., 39 W. 60th St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Independent Filter Press Co., 418-3rd Ave.,
Brooklyn
Joubert & Goslin, 82 Beaver St., N.Y.

FILTER PRESSES, (Contd.)

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.
Oliver United Filters, Inc., 33 W. 42nd St., N.Y.
Patterson Foundry & Machine Co.,
East Liverpool, Ohio
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
T. Shriner & Co., Harrison, N. J.
D. R. Sperry & Co., Batavia, Ill.
United Filters Corp., Hazelton, Pa.

Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Silmo Chemical Co., Vineland, N.J.
Werner G. Smith Co., 2191 W. 110th St.,
Cleveland
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.

FIXATIVES, PERFUME (See ESSENTIAL OILS)**FILTERS (Special)**

Alsop Engineering Corp., 39 W. 60th St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
A. C. Drury & Co., 219 East North Water St.,
Chicago See page 31.
Foster Pump Wks., Inc., 54 Washington St.,
Brooklyn
Jacob House & Sons, 52 St. Paul St., Buffalo
Karl Kiefer Machine Co., Cincinnati
Lancaster Iron Works, Lancaster, Pa.
Mixing Equipment Co., 1024 Garson Ave.,
Rochester, N.Y.
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.
Oliver United Filters, Inc., 33 W. 42nd St., N.Y.
Permit Co., 330 W. 42nd St., N.Y.
T. Shriner & Co., Harrison, N. J.
Struthers, Wells Co., Warren, Pa.
U. S. Bottlers Machy. Co.,
4015 N. Rockwell St.
Whiting Corp., Harvey, Ill.

FLAKE SOAPS (see CHIP SOAPS)**FLOOR MACHINES**

Amer. Floor Surfacing Mach. Co.,
Toledo, O.
Continental Car-Na-Var Corp., Brazil, Ind.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Fay Co., 130 Madison Ave., N.Y.
Finnell System, Inc., 152 Chambers St.,
Elkhart, Ind.
General Floor Craft Corp., 611 Newark St.,
Hoboken, N.J.
Hild Floor Machine Co., 108 W. Lake St.,
Chicago
Kent Co., Rome, N.Y.
S. C. Lawlor Co., 121 N. Curtis St., Chicago
Lincoln-Schluter Floor Machine Co.,
220 W. Grand Ave., Chicago
Ponsell Floor Machine Co.,
220 W. 19th St., N.Y.

FLOOR WAX

Continental Car-Na-Var Corp., Brazil, Ind.
Davies-Young Soap Co., Dayton, O. See page 28.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Fay Co., 130 Madison Ave., N.Y.
Fuld Bros., 2308 Frederick Ave., Baltimore
Hild Floor Machine Co., 108 W. Lake St.,
Chicago
Hockwald Chem. Co., 30 Bluxome St.,
San Francisco
R. M. Hollingshead Co., 840 Cooper St.,
Camden, N. J.
Hull Co., 305 Washington St., Brooklyn
International Metal Polish Co., Indianapolis
Kay Chemical Co., 329 Ringold St., Baltimore
Marshall Products, Inc., 806 N. 1st St., St. Louis
Palmer Products, Inc., Waukesha, Wis.
Paper Makers Chemical Corp.,
Kalamazoo, Mich.
Peck's Prods. Co., St. Louis, Mo.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Sanico Chemical Corp., 611 Broadway, N.Y.
Selig Co., 336 Marietta St., Atlanta, Ga.
Solshine Mfg. Co., 17 Caldwell St., Boston
Standard Oil Co. of Calif., San Francisco
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
Windsor Wax Co., Inc., 50 Church St., N.Y.

FISH OILS

(see also Brokers and Dealers)

Atlantic Products Corp.,
Commercial Trust Bldg., Phila.
Atlas Refinery, Lockwood St., Newark, N. J.
Balfour, Guthrie & Co., 67 Wall St., N.Y.
Irving R. Boddy & Co., 99 Wall St., N.Y.
Harvey & Outerbridge, 250 Park Ave., N.Y.
National Oil Prods. Co., Harrison, N.J.
Procter & Gamble Co., Cincinnati, O.
Rayner & Stonington, 79 Wall St., N.Y.
See inside back cover.
Werner G. Smith Co., 2191 W. 110th St.,
Cleveland
Southern Menhaden Corp.,
350 Madison Ave., N.Y.
Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
See page 65.

FISH OIL SOAPS

Crystal Soap & Chem. Co., Phila.
Goulard & Olena, 140 Liberty St., N.Y.
Los Angeles Soap Co., Los Angeles, Calif.
Marshall Products, Inc., 806 N. 1st St., St. Louis
National Oil Products Co., Harrison, N. J.
Newell Gutradt Co., 350 Fremont St.,
San Francisco, Cal.
North Coast Chem. & Soap Works,
Seattle, Wash.
Palmer Products, Inc., Waukesha, Wis.
Peck's Products Co., 5224 N. 2nd St., St. Louis

FLOOR WAX (Non-Polishing)

Chicago Sanitary Prods. Co.,
2526 W. Congress St., Chicago
Crystal Soap & Chem. Co., Phila.

FLOOR WAX, (Non-Polishing), (Contd.)

Continental Car-Na-Var Corp., Brazil, Ind.
Davies-Young Soap Co., Dayton, O.

See page 28.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Goulard & Olena, 140 Liberty St., N.Y.
 Hammond Paint & Chem. Co., Beacon, N.Y.
 Hild Floor Machine Co., 108 W. Lake St.,
 Chicago

Hockwald Chem. Co., 30 Bluxome St.,
 San Francisco

International Metal Polish Co., Indianapolis
 Kay Chemical Co., 329 Ringold St., Baltimore
 Marshall Products, Inc., 806 N. 1st St., St. Louis
 Miracul Wax Co., 1322 Dolman St., St. Louis
 National Oil Products Co., Harrison, N.J.
 Uncle Sam Chem. Co., 359 Cherry St., N.Y.
 Sanico Chemical Corp., 611 Broadway, N.Y.

FLOWER PRODUCTS, ARTIFICIAL (See AROMATIC CHEMICALS)**FLOWER PRODUCTS, NATURAL (See ESSENTIAL OILS)****FLY SPRAYS (see HOUSEHOLD INSECTICIDE SPRAYS)****FORMALDEHYDE**

(see also *Brokers and Dealers*)

Cleveland Cliffs Iron Co.,
 Union Trust Bldg., Cleveland
 Delta Chem. & Iron Co., Wells, Mich.
E. I. du Pont de Nemours & Co.,
 Wilmington, Del. See page 4.
Grasselli Chemical Co., 1300 Guardian Bldg.,
 Cleveland See page 34.
 Wm. S. Gray Co., 342 Madison Ave., N.Y.
 Heyden Chem. Co., 50 Union Sq., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.
 Mallinckrodt Chemical Work, St. Louis, Mo.
Merck & Co., Rahway, N. J. See page 44.

FOSSIL FLOUR (See KIESELGUHR)**FRAMES (Soap)**

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Houchin Machinery Co., Hawthorne, N. J.
 Huber Machine Co., 265-46th St., Brooklyn
 Littleford Bros., 451 E. Pearl St., Cincinnati
Newman Tallow & Soap Mach. Co.,
 1051 W. 35th St., Chicago (New & Used) See page 45.
 Stein-Brill Corp., 183 Varick St., N.Y.
 (New and Used)

FULLERS EARTH

Chas. B. Chrystal Co., 11 Park Pl., N.Y.
 Fullers Earth Co., 2049 E. 100th St., Cleveland
 Hammill & Gillespie, 225 Broadway, N.Y.
 Harshaw Chemical Co., 1945 E. 97th St.,
 Cleveland

Illinois Silica Co., Cairo, Ill.

Industrial Chem. Sales Co., Inc.,
 230 Park Ave., N.Y.

Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.

International Silica Co., Cairo, Ill.

Jas. H. Rhodes & Co., 157 W. Austin Ave.,
 Chicago

L. A. Solomon & Bro., 216 Pearl St., N.Y.

Tamms Silica Co., 228 N. La Salle St., Chgo.
 Whittaker, Clark & Daniels, 245 Front St., N.Y.

FUMIGANTS

American-British Chem. Supplies, Inc.,
 180 Madison Ave., N.Y. See page 10.

American Cyanamid & Chem. Corp.,
 535 - 5th Ave., N.Y. See page 11.
 Calcyanide Co., Box 307, Grand Central Annex,
 N.Y.

Carbide & Carbon Chemicals Corp.,
 30 East 42nd St., N.Y.

Dow Chemical Co., Midland, Mich.

See page 29.

E. I. du Pont de Nemours & Co.,
 Wilmington, Del. See page 4.
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.

Koppers Prods. Co., Koppers Bldg.,
 Pittsburgh, Pa. See page 37.

Lethelin Products Co., 1 Park Ave., Manhasset,
 N.Y.

Mechling Bros. Chemical Co.,
 Line St. & Cooper Creek, Camden, N. J.
 Rohm & Haas Co., Inc.,
 222 W. Washington Sq., Phila.

White Tar Co., Kearny, N. J. See page 37.

GERANIOL (See AROMATIC CHEMICALS)**GERANIUM OIL (See ESSENTIAL OILS)****GERANYL ACETATE (See AROMATIC CHEMICALS)****GIFT SETS (see NOVELTY SOAPS)****GLASS BOTTLES (See BOTTLES)****GLUES (see ADHESIVES)****GLYCERINE (Refined)**

Armour & Co., 1355 W. 31st St., Chicago
 See page 14.

Colgate-Palmolive-Peet Co., Chicago
 Cox, Aspden & Fletcher, 39 Cortlandt St.,
 N.Y. (Import)

GLYCERINE, (Refined), (Contd.)

Harshaw Chemical Co., 1945 E. 97th St., Cleveland
 Larkin Company, Buffalo, N.Y.
 Lever Bros. Co., Cambridge, Mass.
 Los Angeles Soap Co., Los Angeles, Calif.
 Parsons & Petit, 26 Beaver St., N.Y. (Brokers)
 C. B. Peters Co., 110 William St., N.Y.
 (Brokers)
 Procter & Gamble Co., Cincinnati
 John T. Stanley Co., 642 W. 30th St., N.Y.
 Swift & Co., Union Stock Yards, Chicago
 M. Werk Co., St. Bernard, Cincinnati
 Allen B. Wrisley Co., 6801 West 65th St., Chicago

GLYCERINE DISTILLATION PLANTS

E. B. Badger Co., 25 Pitts St., Boston
 Chemical Equipment Co., Montpelier, Ind.
 William Garrigue & Co., 9 S. Clinton St., Chicago
 Lancaster Iron Works, Lancaster, Pa.
 Ernest Scott & Co., Fall River, Mass.
 Swenson Evaporator Co., Harvey, Ill.
 Wurster & Sanger, 5201 Kenwood Ave., Chicago
 Zaremba Co., Buffalo, N.Y.

GREASES

(see also *Brokers and Dealers*)

Armour & Co., 1355 W. 31st St., Chicago
 See page 14.
 Belleville Rendering Co., Belleville, Ill.
 Consolidated Rendering Co., 40 N. Market St., Boston
 Cudahy Packing Co., 111 W. Monroe St., Chicago
 Darling & Co., 4201 S. Ashland Ave., Chicago
 Rayner & Stonington, 79 Wall St., N.Y.
 See inside back cover.
 Louis Stern Sons, Inc., Produce Exchange, N.Y.
 Theobald Animal By-Prod. Co., Kearny, N.J.
 Toledo Tallow Co., Toledo, Ohio
 Waltham Tallow Co., Waltham, Mass.
 Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y.
 See inside back cover.
 Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
 See page 65.
 Wilson & Co., Union Stock Yards, Chicago
 Wilson-Martin Co., Swanson St., Phila.

GREEN SOAP

Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.
 Crystal Soap & Chem. Co., Phila.
 Davies Young Soap Co., Dayton, O.
 Chicago See page 28.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Fischer Oil & Chem. Co., Bond Hill, Cincinnati
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Genseke Bros., West 48th Pl., & Whipple St.,
 Harley Soap Co., 2832 E. Pacific St., Phila.
 Hockwald Chem. Co., 30 Bluxome St., San Francisco

Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Hull Co., 305 Washington St., Brooklyn
 H. Kohnstamm, Inc., 91 Park Pl., N.Y.
 Kranich Soap Co., 54 Richards St., Brooklyn
 Laurel Soap Mfg. Co., Tioza, Thompson & Almond Sts., Phila.
 Los Angeles Soap Co., Los Angeles, Calif.
 Marshall Products, Inc., 806 N. 1st St., St. Louis
 National Oil Products Co., Harrison, N.J.
 National Soap Co., Tacoma, Wash.
 Palmer Products, Inc., Waukesha, Wis.
 Peck's Prod. Co., 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Geo. A. Schmidt Co., 236 W. North Ave., Chicago
 Scholler Bros. & Co., Phila.
 Werner G. Smith Co., 2191 W. 110th St., Cleveland
 Staley Sales Corp., Decatur, Ill.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago
 Chas. W. Young & Co., Phila.

GRINDING MACHINERY

Abbe Engineering Co., 50 Church St., N.Y.
 American Pulverizer Co., 18th & Austin Sts., St. Louis
 C. O. Bartlett & Snow Co., 6200 Harvard Ave., Cleveland
 Blanchard Machine Co., 64 State St., Cambridge, Mass.
 Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 J. H. Day Co., 1144 Harrison Ave., Cincinnati
 Gruendler Patent Crusher & Pulverizer Co., 900 N. First St., St. Louis
 B. F. Gump Co., 431 S. Clinton St., Chicago
 Houchin Machy. Co., Hawthorne, N.J.
 Huber Machine Co., 265-46th St., Brooklyn
 Kent Machine Works, 137 Gold St., Brooklyn
 Lancaster Iron Works, Lancaster, Pa.
 J. M. Lehman Co., 248 W. Broadway, N.Y.
 See page 39.
 Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
 See page 45.
 Olsen & Tilgner Mfg. Co., 2276 Elston Ave., Chicago
 Raymond Bros. Impact Pulverizer Co., 1302 N. Branch St., Chicago
 Patterson Foundry & Machine Co., East Liverpool, O.
 F. J. Stokes Machine Co., Philadelphia, Pa.
 Sturtevant Mill Co., Harrison Sq., Boston
 Williams Patent Crusher & Pulverizer Co., 2709 N. 9th St., St. Louis

GUAGES (see INSTRUMENTS)**GUMS**

Wm. Benkert & Co., 100 Gold St., N.Y.
 See page 19.
 T. G. Cooper & Co., 47 N. 2nd St., Phila.
 A. C. Drury & Co., 219 East North Water St., Chicago
 See page 31.
 J. L. Hopkins & Co., 220 Broadway, N.Y.
 Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.

GUMS, (Contd.)

Stanley Jordan & Co., 11 Water St., N.Y.
 Murray & Nickell Mfg. Co., 2608 Arthington
 St., Chicago
 Neuman-Buslee & Wolfe, 224 W. Huron St.,
 Chicago, Ill.
S. B. Penick & Co., 132 Nassau St., N.Y.
 See page 47.
 R. F. Revson Co., 91—7th Ave., N.Y.
 Stein, Hall & Co., 285 Madison Ave., N.Y.
 Thurston & Braidaich, 27 Cliff St., N.Y.
 G. A. Wharry & Co., 15 Moore St., N.Y.

GUNS, Powder (see BELLOWS)**HAND (Mechanic's) SOAP**

Cincinnati Soap Co., Cincinnati
 Columbia Soap & Chem. Co., Inc.,
 217 Clara St., San Francisco
Davies Young Soap Co., Dayton, O.
 See page 28.
 Diamond Soap Co., 1 Lowden St.,
 Elizabeth, N. J.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 J. Eavenson & Sons., Del. & Penn Sts.,
 Camden, N. J.
 Hewitt Soap Co., Dayton, O.
 R. M. Hollingshead Co., 840 Cooper St.,
 Camden, N. J.
 Hull Co., 305 Washington St., Brooklyn
 Jansen Soap & Chemical Co., 324 Leavenworth
 St., San Francisco, Cal.
 Marshall Products, Inc., 806 N. 1st St., St. Louis
 Mione Mfg. Co., Collingdale, Pa.
 North Coast Soap & Chem. Wks.,
 Seattle, Wash.
 Palmer Products, Inc., Waukesha, Wis.
 Peck's Prod. Co., 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 J. T. Robertson Co., 147 Richmond Ave.,
 Syracuse, N. Y.
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 Selig Co., 336 Marietta St., Atlanta, Ga.
 John T. Stanley Co., 640 W. 30th St., N.Y.
 United Cleanser Mfg. Co., 160 Second St.,
 Cambridge, Mass.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Vasco Prods. Co., Elmira, N.Y.
 Vliet Soap Co., 638 Monroe St., Brooklyn
 Allen B. Wrisley Co., 6801 West 65th St.,
 Chicago, Ill.
 Chas. W. Young & Co., Phila.

HARDWATER SOAPS (see COCONUT OIL SOAPS)**HELIOTROPIN (See AROMATIC CHEMICALS)****HEXALIN**

E. I. du Pont de Nemours & Co., Inc.,
 Wilmington, Del. See page 4.

HOLDERS (Deodorizing Block)

Cin-Made Corp., (fibre)
 294 Eggleston Ave., Cincinnati
Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Fulb Bros., 2308 Frederick Ave., Baltimore
 Goulard & Olena, 140 Liberty St., N.Y.
 Hockwald Chem. Co., 30 Bluxome St.,
 San Francisco
 Thos. W. Houchin Corp., 9-15 McPherson Pl.,
 Jersey City, N.J.
 Jansen Soap & Chemical Co.,
 324 Leavenworth St., San Francisco, Cal.
 Oneida Chemical Co., 760 Blandina St.,
 Utica, N.Y.
 Palmer Products Co., Waukesha, Wis.
 Rochester Germicide Co., 16 Dowling Pl.,
 Rochester, N.Y.
 Sanitary Supplies Co., P. O. Box 5208, Phila.
 Uncle Sam Chem. Co., 359 Cherry St., N.Y.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 William Vogel & Bros., 37 S. 9th St.,
 Brooklyn

HORTICULTURAL SPRAY BASE (See PETROLEUM)**HOUSEHOLD INSECTICIDE BASE (See PETROLEUM)****HOUSEHOLD INSECTICIDES, LIQUID**

Baird & McGuire, Inc., Holbrook, Mass.
 See page 16.
 Chemical Compounding Corp., 262 Huron St.,
 Brooklyn
 Chemical Supply Co., 2450 Canal Rd., Cleveland
 Cino Chem. Prods. Co., 210 Main St.,
 Cincinnati
Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.
 Columbia Soap & Chem. Co., Inc., 217 Clara St.,
 San Francisco
 Creco Co., Inc., Creco Bldg.,
 Long Island City, N.Y.
 Crystal Labs., Inc., 21 W. Park Way, N. S.,
 Pittsburgh, Pa.
 Dethol Mfg. Co., 922 "E" St., N.W.,
 Washington, D.C.
 C. B. Dolge Co., Westport, Conn.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 B. R. Elk & Co., Garfield, N. J.
 Elkay Prods. Corp., 542—1st Ave., N.Y.
 Fulb Bros., 2308 Frederick Ave., Baltimore
 James Good, Inc., 2110 Susquehanna Ave.,
 Phila.
 Goulard & Olena, 140 Liberty St., N.Y.
 Harley Soap Co., 2832 E. Pacific St., Phila.
 Hockwald Chem. Co., 30 Bluxome St.,
 San Francisco
 R. M. Hollingshead Co., 840 Cooper St.,
 Camden, N. J.
 Huntington Laboratories, Huntington, Ind.
 Jansen Soap & Chem. Co.,
 324 Leavenworth St., San Francisco, Cal.
 Kay Chemical Co., 329 Ringold St., Baltimore
Koppers Products Co.,
 Koppers Bldg., Pittsburgh See page 37.
 Marshall Products, Inc., 806 N. 1st St., St. Louis

**HOUSEHOLD INSECTICIDES, (Liquid),
(Contd.)**

McCormick & Co., Inc., Baltimore, Md. See page 41.
 Edgar A. Murray Co., 2703 Guoin St., Detroit
 Palmer Products Co., Waukesha, Wis.
 Pro-Tex-All Co., Evansville, Ind.
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Shores Co., Cedar Rapids, Ia.
 Solshine Mfg. Co., 17 Caldwell St., Boston
 Standard Oil Co. of Calif., San Francisco
 Standard Tar Prods. Co.,
 1621 N. Commerce St., Milwaukee
 Uncle Sam Chem. Co., 359 Cherry St., N.Y.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Vliet & Co., 638 Monroe St., Brooklyn
White Tar Co., Kearny, N.J. See page 37.
 Robert C. White Co., Falls of Schuylkill,
 Phila.

**HOUSEHOLD INSECTICIDES,
POWDERED**

Allaire Woodward & Co., Peoria, Ill.
 Chemical Supply Co., 2450 Canal Rd., Cleveland
 Creco Co., Inc., Creco Bldg.,
 Long Island City, N.Y.
 Derris, Inc., 79 Wall St., N.Y.
 C. B. Dolge Co., Westport, Conn.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 B. R. Elk & Co., Garfield, N.J.
 Fort Pitt Chemical Co., 3134 Penn Ave.,
 Pittsburgh
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Hockwald Chem. Co., 30 Bluxome St.,
 San Francisco
 J. L. Hopkins & Co., 220 Broadway, N.Y.
 Jansen Soap & Chemical Co.,
 Jansen Soap & Chem. Co., 324 Leavenworth St.,
 San Francisco, Cal.
 Kay Chemical Co., 329 Ringold St., Baltimore
**Koppers Prods Co., Koppers Bldg.,
Pittsburgh, Pa.** See page 37.
 Marshall Prods., Inc., 806 N. 1st St., St. Louis
McCormick & Co., Inc., Baltimore, Md. See page 41.
 McLaughlin Gormley King Co.,
 1715-5th St., S. E., Minneapolis, Minn.
 Edgar A. Murray Co., 2703 Guoin St., Detroit
 Palmer Products Co., Waukesha, Wis.
S. B. Penick & Co., 132 Nassau St., N.Y. See page 47.
John Powell & Co., 114 E. 32nd St., N.Y. See page 49.

Pro-Tex-All Co., Evansville, Ind.
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Ratin Labs., 116 Broad St., N.Y.
 Sanico Chemical Corp., 611 Broadway, N.Y.
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Shores Co., Cedar Rapids, Ia.
 Uncle Sam Chem. Co., 359 Cherry St., N.Y.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
White Tar Co., Kearny, N.J. See page 37.

HYDROGENATED OILS

Procter & Gamble Co., Cincinnati, O.
 Wesson Oil & Snowdrift Co.,
 Produce Exchange, N.Y.
 Wyandotte Oil Co., Wyandotte, Mich.

HYDROSULFITES (Soap Bleaches)

Grasselli Chemical Co., 1300 Guardian Bldg.,
 Cleveland See page 34.
 Merrimac Chem. Co., 148 State St., Boston
 Rohm & Haas Co., Inc.,
 222 W. Washington Sq., Phila.
Royce Chem. Co., Rutherford, N.J.
 Royce Chem. Co., Carlton Hill, N.J.

**HYDROXYCITRONELLAL (See AROMATIC
CHEMICALS)****INFUSORIAL EARTH (see KIESELGUHR)****INSECT FLOWERS (See PYRETHRUM)****INSECT POWDER (see PYRETHRUM)****INSECT POWDER GUNS (See BELLOWS)****INSECTICIDE SPRAY PERFUMES**

van Ameringen-Haebler, Inc.,
 315-4th Ave., N.Y. See page 12.
 Compagnie Duval, 121 E. 24th St., N.Y.
 Compagnie Parento, Croton, N.Y.
 Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y. See page 30.
 Evergreen Chemical Co., 160-5th Ave., N.Y.
 Felton Chemical Co., 599 Johnson Ave.,
 Brooklyn, N.Y.
 Benj. French, Inc., 160-5th Ave., N.Y.
 Fritzsche Brothers, Inc., 78 Beekman St., N.Y.
Givaudan-Delawanna, Inc., 80-5th Ave., N.Y. See page 33.
Geo. Lueders & Co., 427 Washington St., N.Y. See page 40.
 Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
 Neumann-Buslee & Wolfe, 224 W. Huron St.,
 Chicago
 Pfaltz & Bauer, 300 Pearl St., N.Y.
 Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.
John Powell & Co., 114 E. 32nd St., N.Y. See page 49.
 Riviera Products Co., 215 W. Ohio St.,
 Chicago
 H. C. Ryland, Inc., 161 Water St., N.Y.
 George Silver Import Co., 461-4th Ave., N.Y.
 Sherwood Petroleum Co., Bush Terminal Bldg.,
 No. 1, Brooklyn, N.Y.
 Synfleur Scientific Labs., Monticello, N.Y.
Ungerer & Co., 13 W. 20th St., N.Y. See page 61.
 United Laboratories, 8 E. 12th St., N.Y.
 Albert Verley, Inc., 11 E. Austin Ave., Chicago

INSTRUMENTS

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland
 Bausch & Lomb Optical Co., Rochester, N.Y.
 Bristol Co., Waterbury, Conn.
 Brown Instrument Co.,
 Wayne & Windrim Sts., Philadelphia
 Buffalo Meter Co., 2890 Main St., Buffalo, N.Y.
 G. M. Davis Regulator Co.,
 2541 S. Washtenaw, Chicago
 Eimer & Amend, 19th St. & 3rd Ave., N.Y.

INSTRUMENTS, (Contd.)

Foxboro Co., Foxboro, Mass.
 Liquidometer Corp., Long Island City, N.Y.
 Pneumercator Co., Sperry Bldg., Brooklyn
 Precision Thermometer Co.,
 1434 Brandywine St., Philadelphia
 Republic Flow Meters Co., 2240 Diversey Blvd.,
 Chicago
 Taylor Instrument Co., Rochester, N.Y.

IONONE (Violet Base) (See AROMATIC CHEMICALS)**JAPAN WAX (See WAXES)****JASMIN, ARTIFICIAL (See AROMATIC CHEMICALS)****KEROSENE (See PETROLEUM)****KETTLES**

Alloy Prods. Corp., 221 Madison St.,
 Waukesha, Wis.
 Alsop Engineering Corp., 39 W. 60th St., N.Y.
 Bethlehem Foundry & Machine Co.,
 Grand Central Bldg., N.Y.
 Brighton Copper Works., 2163 Western Ave.,
 Cincinnati
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 J. H. Day Co., 1144 Harrison Ave., Cincinnati
 Houchin Machy. Co., Hawthorne, N.J.
 Huber Machine Co., 265-46th St., Brooklyn
 Lancaster Iron Works, 564 S. Prince St.,
 Lancaster, Pa.
J. M. Lehmann Co., 248 W. Broadway, N.Y.
 See page 39.
 Littleford Bros., 443 E. Pearl St., Cincinnati
 Mixing Equipment Co., 1044 Garson Ave.,
 Rochester, N.Y.
Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used) See page 45.
 Patterson Foundry & Machine Co.,
 East Liverpool, O.
 Pfaudler Co., 89 East Ave., Rochester, N.Y.
 Sowers Mfg. Co., 1296 Niagara St.,
 Buffalo, N.Y.
 F. J. Stokes Mach. Co., Philadelphia, Pa.
 Struthers-Wells Co., Warren, Pa.
 Stuart & Peterson Co., Burlington, N.J.
 H. B. Trout Co., 240 Ohio St., Buffalo, N.Y.

KIESELGUHR (Infusorial Earth)

Chas. B. Chrystal Company, 11 Park Pl., N.Y.
A. C. Drury & Co., 219 East North Water St.,
 Chicago See page 31.
 Hammill & Gillespie, 225 Broadway, N.Y.
 Industrial Chem. Sales Co., Inc.,
 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 R. F. Revson Co., 91-7th Ave., N.Y.
 L. A. Salomon & Bro., 216 Pearl St., N.Y.
 Tamms Silica Co., 228 N. La Salle St., Chicago
 Whittaker, Clark & Daniels, 245 Front St., N.Y.
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

KITS (Wooden) (see PAILS, WOODEN)**LABELING MACHINERY (Bottles)**

Burt Machine Co., Baltimore, Md.
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Economic Machinery Corp., Worcester, Mass.
 Edward Ermold Co., 652-64 Hudson St., N.Y.
 McDonald Engineering Corp., 220 Varet St.,
 Brooklyn, N.Y.
 National Labeling Machine Co., 358-4th Ave.,
 Long Island City, N.Y.
 New Jersey Machine Corp., Hoboken, N.J.
Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used) See page 45.
Pneumatic Scale Corp., Norfolk Downs, Mass.
 See page 48.
 Potdevin Machine Co., 1224-38th St.,
 Brooklyn (hand)
 F. B. Redington Co., 112 S. Sangamon St.,
 Chicago

LABELING MACHINES (Boxes & Cakes)

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 McDonald Engineering Corp., 220 Varet St.,
 Brooklyn, N.Y.
 New Jersey Machine Corp., Hoboken, N.J.
Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used) See page 45.
Pneumatic Scale Corp., Norfolk Downs, Mass.
 See page 48.
Stokes & Smith Co., Summerdale, Phila., Pa.
 See page 59.

LABELING MACHINERY (Cans)

Burt Machine Co., Baltimore
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Fred H. Knapp Corp., Ridgewood, N.J.
 J. L. Ferguson Co., Joliet, Ill.
 McDonald Engineering Corp., 220 Varet St.,
 Brooklyn, N.Y.
 New Jersey Machine Corp., Hoboken, N.J.
Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used) See page 45.
Pneumatic Scale Corp., Norfolk Downs, Mass.
 See page 48.
 Potdevin Machine Co., 1224-38th St.,
 Brooklyn (hand)
 F. B. Redington Co., 112 S. Sangamon St.,
 Chicago

LABELS

American Lithographic Co., 52 E. 19th St., N.Y.
 Dennison Mfg. Co., Framingham, Mass.
 Foxon Co., Providence, R. I.
 Henderson Lithographing Co., Norwood,
 Cincinnati
 R. J. Kittredge Co., 812 W. Superior St.,
 Chicago
 Richard J. Krause, 304 E. 23rd St., N.Y.
 U. S. Printing & Litho. Co., Cincinnati, O.

LABORATORIES, CONSULTING (see Consultants)

LABORATORY APPARATUS

Beach-Russ Co., 50 Church St., N.Y.
 Central Scientific Co., 460 E. Ohio St., Chicago
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Eimer & Amend, 19th St. & 3rd Ave., N.Y.
 Empire Lab. Supply Co., 218 E. 37th St., N.Y.
 Fisher Scientific Co., Pittsburgh
 Emil Greiner Co., 55 Van Dam St., N.Y.
 Laboratory Construction Co., 1111 Holmes St.,
 Kansas City, Mo.
J. M. Lehmann Co., 248 W. Broadway, N.Y.
 See page 39.
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
 See page 45.
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
 Scientific Materials Co., Pittsburgh
 F. J. Stokes Machine Co., Tabor Rd., Phila.
 Arthur H. Thomas Co., Wash Sq., Phila.
 Will Corp., Rochester, N.Y.

LABORATORY CHEMICALS

J. T. Baker Chemical Co., Phillipsburg, N. J.
General Chemical Co., 40 Rector St., N.Y.
 See page 32.
 Jungmann & Co., 157 Chambers St., N.Y.
 Harshaw Chemical Co., 1945 E. 97th St.,
 Cleveland
 Mallinckrodt Chemical Works, 3600 N. 2nd St.,
 St. Louis
Merck & Co., Rahway, N. J. See page 44.
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
 Sterling Products Co., Easton, Pa.

LANOLIN

Bopf-Whitam Corp., Westfield, N.J.
A. C. Drury & Co., 219 East North Water St.,
 Chicago See page 31.
 Charles L. Huisking, Inc., 155 Varick St., N.Y.
 Hummel Chemical Co., 90 West St., N.Y.
 Adolphe Hurst & Co., 420 Lexington Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Jungmann & Co., 157 Chambers St., N.Y.
Merck & Co., Rahway, N. J. See page 44.
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

LAUNDRY BLUE

Fezandie & Sperre, 205 Fulton St., N.Y.
 Interstate Color Co., 5 Beekman St., N.Y.
 National Aniline & Chemical Co., 40 Rector St.,
 N.Y.
Pylam Products Co., 799 Greenwich St., N.Y.
 See page 52.

LAUNDRY SOAP, CAKE

Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Cincinnati Soap Co., Cincinnati, O.
 Du Bois Soap Co., Cincinnati, O.
 J. Eavenson & Sons, Del. & Penn St.,
 Camden, N. J.
 Fels & Co., Philadelphia
 Hewitt Soap Co., Dayton, O.
 Holman Soap Co., 3100 Fox St., Chicago
 Lightfoot Schultz Co., 1412 Park Ave.,
 Hoboken, N. J.

Los Angeles Soap Co., Los Angeles, Calif.
 Manhattan Soap Co., Bristol, Pa.
 Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.
 National Soap Co., 357 S. 25th St.,
 Tacoma, Wash.
 Newell Gutradt Co., 350 Fremont St.,
 San Francisco, Cal.
 Peck's Prods. Co., 5224 N. 2nd St., St. Louis
 Procter & Gamble Co., Cincinnati
 North Coast Chem. & Soap Wks.,
 Seattle Wash.
 J. T. Robertson Co., 147 Richmond Ave.,
 Syracuse, N.Y.
 John T. Stanley Co., 640 W. 30th St., N.Y.
 Vliet Soap Co., 63 Monroe St., Brooklyn
 M. Werk Co., St. Bernard, Cincinnati
 Windsor Soap Co., Buffalo, N.Y.
 Allen B. Wrisley Co., 6801 W. 65th St.,
 Chicago, Ill.
 Chas. W. Young & Co., Phila.

LAUNDRY SOAP, CHIP

Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Cincinnati Soap Co., Cincinnati, O.
 Du Bois Soap Co., Cincinnati, O.
 J. Eavenson & Sons, Del. & Penn Sts.,
 Camden, N. J.
 Harris Soap Co., Buffalo, N.Y.
 Haskins Bros. & Co., Sioux City, Iowa
 Hewitt Soap Co., Dayton, Ohio
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 H. Kohnstamm & Co., 91 Park Pl., N.Y.
 Lightfoot Schultz Co., 1412 Park Ave.,
 Hoboken, N. J.
 Los Angeles Soap Co., Los Angeles, Calif.
 Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.
 Nat'l Milling & Chem. Co., Manayunk, Phila.
 National Soap Co., 357 South 25th St.,
 Tacoma, Wash.
 North Coast Soap & Chem. Wks.,
 Seattle, Wash.
 Peck's Prods. Co., St. Louis, Mo.
 Procter & Gamble Co., Cincinnati
 J. T. Robertson Co., 147 Richmond Ave.,
 Syracuse, N.Y.
 John T. Stanley Co., 640 W. 30th St., N.Y.
 M. Werk Co., St. Bernard, Cincinnati
 Allen B. Wrisley Co., 6801 W. 65th St.,
 Chicago, Ill.
 Chas. W. Young & Co., Phila.

LAUNDRY SOAP, POWD. AND GRAN.

American Soap Powder Wks.,
 100 Van Dyke St., Brooklyn, N.Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Du Bois Soap Co., Cincinnati, O.
 J. Eavenson & Sons, Del. & Penn Sts.,
 Camden, N. J.
 Hewitt Soap Co., Dayton, Ohio
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 H. Kohnstamm & Co., 91 Park Pl., N.Y.
 Lever Bros. Co., Cambridge, Mass.
 Los Angeles Soap Co., Los Angeles, Calif.
 Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.
 Nat'l Milling & Chem. Co., Manayunk, Phila.
 National Soap Co., 357 South 25th St.,
 Tacoma, Wash.
 North Coast Soap & Chem. Wks.,
 Seattle, Wash.
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.

LAUNDRY SOAP, POWD. AND GRAN.,
(Contd.)

Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
J. T. Robertson Co., 147 Richmond Ave.,
Syracuse, N.Y.
John T. Stanley Co., 640 W. 30th St., N.Y.
Allen B. Wrisley Co., 6801 W. 65th St.,
Chicago, Ill.
Chas. W. Young & Co., Phila.

LAUNDRY SODA, see SODA**LAUNDRY SOURS (Fluoride)**

American Cyanamid & Chem. Corp.,
535—5th Ave., N.Y. See page 11.
American Fluoride Corp.,
151 W. 19th St., N.Y.
Bowker Chem. Co., 420 Lexington Ave., N.Y.
See page 20.
Harshaw Chemical Co., 1945 E. 97th St.,
Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
Jungmann & Co., 157 Chambers St., N.Y.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
Victor Chemical Wks., 141 W. Jackson Blvd.,
Chicago See page 63.

LAVENDER OIL (See ESSENTIAL OILS)**LEMON OIL (See ESSENTIAL OILS)****LEMONGRASS OIL (See ESSENTIAL OILS)****LINALOE OIL (See ESSENTIAL OILS)****LINALOOL (See AROMATIC CHEMICALS)****LINALYL ACETATE (See AROMATIC CHEMICALS)****LINERS (see BAG LINERS, BARREL LINERS, ETC.)****LINING MACHINERY (Cartons)**

Pneumatic Scale Corp., Norfolk Downs, Mass.
See page 48.
F. B. Redington Co., 112 S. Sangamon St.,
Chicago

LINSEED OIL

(see also Brokers and Dealers)

Archer-Daniels-Midland Corp.,
Minneapolis, Minn.
William O. Goodrich Co., Milwaukee, Wis.
Spencer Kellogg & Sons, Buffalo, N.Y.

Kelloggs & Miller, Amsterdam, N.Y.
Minnesota Linseed Oil Co.,
Minneapolis, Minn.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y. (Dealers)
See inside back cover.

LINSEED OIL SOAP

Clifton Chemical Co., 246 Front St., N.Y.
See page 24.

Crystal Soap & Chem. Co.,
State Rd. & Robbins Ave., Philadelphia
Davies-Young Soap Co., Dayton, O.

See page 28.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Fuld Bros., 2308 Frederick Ave., Baltimore
Genseke Bros., West 48th Pl. & Whipple St.,
Chicago

Harley Soap Co., 2832 E. Pacific St., Phila.
Hockwald Chemical Co., 30 Bluxome St.,
San Francisco

Jansen Soap & Chemical Co.,
324 Leavenworth St., San Francisco, Cal.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Kranich Soap Co., 54 Richard St.,
Brooklyn, N.Y.

Marshall Products, Inc., 806 N. 1st St., St. Louis
National Oil Products Co., Harrison, N.J.
Newell Gutradt Co., 350 Fremont St.,
San Francisco, Calif.

North Coast Chem. & Soap Wks., Seattle,
Wash.

Palmer Products Co., Waukesha, Wis.

Peck's Prods. Co., St. Louis
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago, Ill.

Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago

Werner G. Smith Co., 2191 W. 110th St.,
Cleveland

John T. Stanley Co., 640 W. 30th St., N.Y.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
Chas. W. Young & Co., Phila.

LIQUID SOAP BASE

Antiseptol Liquid Soap Co.,
5424 North West Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.

Cincinnati Soap Co., Cincinnati
Clifton Chemical Co., 246 Front St., N.Y.
See page 24.

Columbia Soap & Chem. Co., Inc., 217 Clara St.,
San Francisco
Creco Co., Inc., Creco Bldg.,
Long Island City, N.Y.

Davies-Young Soap Co., Dayton, O.
See page 28.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Fuld Bros., 2308 Frederick Ave., Baltimore
Harley Soap Co., 2832 E. Pacific St., Phila.
Hockwald Chemical Co., 30 Bluxome St.,
San Francisco

Holman Soap Co., 3100 Fox St., Chicago, Ill.
Jansen Soap & Chemical Co.,
324 Leavenworth St., San Francisco, Cal.

Los Angeles Soap Co., Los Angeles, Calif.
H. Kohnstamm & Co., 91 Park Pl., N.Y.

LIQUID SOAP BASE, (Contd.)

Kranich Soap Co., 54 Richards St., Brooklyn
 Marshall Products, Inc., 806 N. 1st St., St. Louis
 National Oil Products Co., Harrison, N.J.
 National Soap Co., 357 South 25th St.,
 Tacoma, Wash.

New York Soap Corp., 294 Pearl St., N.Y.
 North Coast Chemical & Soap Wks.,
 Seattle, Wash.

Palmer Products, Inc., Waukesha, Wis.
 Peck's Prods. Co., 5224 N. 2nd St., St. Louis
John Powell & Co., Inc., 114 E. 32nd St., N.Y.
 See page 50.

Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Werner G. Smith Co., 2191 W. 110th St.,
 Cleveland
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Allen B. Wriley Co., 6801 W. 65th St.,
 Chicago, Ill.

C. A. Seguin Co., 500 N. Dearborn St., Chi.
 Wm. G. Sibbach & Co., 201 S. 2nd Ave.,
 Maywood, Ill.

Synfleur Scientific Labs., Monticello, N.Y.
Ungerer & Co., 13 W. 20th St., N.Y.
 See page 61.

United Laboratories, 8 E. 12th St., N.Y.
 Albert Verley, Inc., 11 E. Austin Ave., Chicago

LIQUID SOAP COLORS

(see also *Perfuming Compounds*)

American Aniline Products, Inc.,
 50 Union Sq., N.Y.
 Dyestuffs & Chemicals, Inc.,
 11th & Monroe Sts., St. Louis
 Fezandie & Sperrle, 205 Fulton St., N.Y.
 Interstate Color Co., Inc., 5 Beckman St., N.Y.
 Leeben Chem. Co., 389 Washington St., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y.
 See page 52.
 Sandoz Chem. Wks., 61 Van Dam St., N.Y.

LIQUID SOAP PERFUMES

**van Ameringen-Haebler, Inc.,
 315-4th Ave., N.Y.** See page 12.

Antoine Chiris Co., 147 Waverly Pl., N.Y.
 Compagnie Duval, 121 E. 24th St., N.Y.

Compagnie Parento, Inc.,
 Croton-on-Hudson, N.Y.

Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.

See page 30.

**A. C. Drury & Co., 219 East North Water St.,
 Chicago** See page 31.

**E. I. du Pont de Nemours & Co., Inc.,
 Wilmington, Del.** See page 4.

Evergreen Chemical Co., 160 Fifth Ave., N.Y.
 Felton Chemical Co., 599 Johnson Ave.,
 Brooklyn

Benj. French, Inc., 160-5th Ave., N.Y.
 Fritzsche Brothers, Inc., 78 Beckman St., N.Y.

Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.
 See page 33.

Heine & Co., 54 Cliff St., N.Y.

Industrial Organics, 131 E. 45th St., N.Y.

Lautier Fils, 47 Cliff St., N.Y.

Pierre Lemoine, Inc., 200 Varick St., N.Y.

Geo. Lueders & Co., 427 Washington St., N.Y.

See page 40.

Magnus, Mabee & Reynard, 32 Cliff St., N.Y.

A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.

Neuman-Buslee & Wolfe,
 224 W. Horn St., Chicago

Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.

Riviera Products Co., 215 W. Ohio St., Chicago

H. C. Ryland, Inc., 161 Water St., N.Y.

Edwin Seebach Co., 912 Broadway, N.Y.

LIQUID SOAPS

(see also *Medicinal Soaps, Coconut Oil Soaps, etc.*)

Antiseptol Liquid Soap Co.,
 5424 N. W. Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago

See page 14.

Bristol Myers Co., 90 West St., N.Y.
 Chemical Supply Co., 2450 Canal Rd., Cleveland
 Cincinnati Soap Co., Cincinnati

Clifton Chem. Co., Inc., 246 Front St., N.Y.
 See page 24.

Colgate-Palmolive-Peet Co., Palmolive Tower,
 Chicago
**Columbia Soap & Chem. Co., Inc., 217 Clara St.,
 San Francisco**

Continental Car-Na-Var Corp., Brazil, Ind.
 Creco Co., Inc., Creco Bldg.,
 Long Island City, N.Y.

Davies-Young Soap Co., Dayton, O.
 See page 28.

Diamond Soap Co., 1 Lowden St.,
 Elizabeth, N. J.

C. B. Dolge Co., Westport, Conn.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

J. Eavenson & Sons, Del. & Penn. Sts.,
 Camden, N. J.

Fort Pitt Chem. Co., 3134 Penn Ave., Pitts.
 Fuld Bros., 2308 Frederick Ave., Baltimore

Goulard & Olena, 140 Liberty St., N.Y.
 Green Oil Soap Co., 166 N. Curtis St., Chicago
 Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chemical Co., 30 Bluxome St.,
 San Francisco

R. M. Hollingshead Co., 840 Cooper St.,
 Camden, N. J.

Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Jansen Soap & Chemical Co.,
 324 Leavenworth St., San Francisco, Cal.

**Koppers Products Co.,
 Koppers Bldg., Pittsburgh** See page 37.

H. Kohnstamm & Co., 91 Park Pl., N.Y.
 Kranich Soap Co., 54 Richards St., Brooklyn

Los Angeles Soap Co., Los Angeles, Calif.
 Marshall Prods., Inc., 806 N. 1st St., St. Louis

National Oil Prods. Co., Harrison, N.J.
 New York Soap Corp., 294 Pearl St., N.Y.

North Coast Chem. & Soap Wks.,
 Seattle, Wash.

Palmer Products Co., Waukesha, Wis.
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.

Peck's Prods. Co., 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prod. Co.,
 700 W. Division St., Chicago

Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago

Selig Co., 336 Marietta St., Atlanta, Ga.
 Shores Co., Cedar Rapids, Ia.

Werner G. Smith Co., 2191 W. 110th St.,
 Cleveland

John T. Stanley Co., 640 W. 30th St., N.Y.
 State Chemical Mfg. Co., 2435 Superior Ave.,
 Cleveland, O.

U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago

LIQUID SOAPS, (Contd.)

Vasco Prods. Co., Elmira, N.Y.
 Jacques Wolfe & Co., Passaic, N.J.
 Allen B. Wrisley Co., 6801 W. 65th St.,
 Chicago, Ill.
 Chas. W. Young & Co., Phila.

MACHINERY (USED) (see USED MACHINERY)**MAGNESIUM STEARATE (see STEARATES)****MARSEILLES SOAP (see TEXTILE SOAPS, OLIVE OIL SOAPS)****MECHANIC'S SOAP (see HAND SOAP)****MEDICINAL SOAPS, CAKE**

Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Cincinnati Soap Co., Cincinnati
 J. Eavenson & Sons, Del. & Penn Sts.,
 Camden, N. J.
 Hewitt Soap Co., Dayton, O.
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Los Angeles Soap Co., Los Angeles
 Newell Gutradt Co., 350 Fremont St.,
 San Francisco, Cal.
 Peck's Prods. Co., 5224 N. 2nd St., St. Louis
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 John T. Stanley Co., 640 W. 30th St., N.Y.
 Allen B. Wrisley Co., 6801 W. 65th St.,
 Chicago

MEDICINAL SOAPS, LIQUID

Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Bristol-Myers Co., 90 West St., N.Y.
 Cincinnati Soap Co., Cincinnati
 Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.
 Creco Co., Inc., Creco Bldg.,
 Long Island City, N.Y.
 J. Eavenson & Sons, Del. & Penn Sts.,
 Camden, N. J.
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Jansen Soap & Chemical Co.,
 324 Leavenworth St., San Francisco, Cal.
 H. Kohnstamm & Co., 91 Park Pl., N.Y.
 Kranich Soap Co., 54 Richards St., Brooklyn
 Los Angeles Soap Co., Los Angeles
 Marshall Products, Inc., 806 N. 1st St., St. Louis
 Palmer Products Co., Waukesha, Wis.
 Peck's Prods. Co., 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 Shores Co., Cedar Rapids, Ia.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Allen B. Wrisley Co., 6801 W. 65th St.,
 Chicago

MENTHOL

(see also Essential Oils)
 H. J. Baker & Bros., 271 Madison Ave., N.Y.
 Wm. Benkert & Co., 100 Gold St., N.Y.
 See page 19.
 S. W. Bridges & Co., 70 Pine St., N.Y.
 A. C. Drury & Co., 219 East North Water St.,
 Chicago
 Hosken & Co., 56 Pine St., N.Y.
 Stanley Jordan & Co., 11 Water St., N.Y.
 McKesson & Robbins, Inc., 79 Cliff St., N.Y.
 Mitsui & Co., 350—5th Ave., N.Y.
 Sherka Chemical Co., 75 West St., N.Y.
 S. Suzuki & Co., 230 Park Ave., N.Y.

MERCURY BICHLORIDE (Corrosive Sub-limate)

General Chem. Co., 40 Rector St., N.Y.
 See page 32.
 Heyden Chemical Corp., 50 Union Sq., N.Y.
 Mallinckrodt Chemical Works, St. Louis
 Merck & Co., Rahway, N.J.
 See page 44.
 New York Quinine & Chem. Wks.,
 N. 11th & Berry Sts., Brooklyn
 Chas. Pfizer & Co., 81 Maiden Lane, N.Y.

METAL CAPS (see CAPS, METAL)**METAL POLISH (see POLISH, METAL)****METERS (see INSTRUMENTS)****METHYL ANTHRANILATE**

(see also Aromatic Chemicals)
 Dow Chemical Co., Midland, Mich.
 See page 29.
 Van Dyk & Co., 50 W. 17th St., N.Y.
 See page 62.

METHYL SALICYLATE (Artificial

Wintergreen)
 (see also Essential Oils)
 Dow Chemical Co., Midland, Mich.
 See page 29.
 Heyden Chemical Corp., 50 Union Sq., N.Y.
 Merck & Co., Rahway, N.J.
 See page 44.
 Monsanto Chemical Works, 1724 S. 2nd St.,
 St. Louis

MILLS, PEBBLE (See GRINDING MACHINERY)**MILLS, SOAP POWDER**

Abbe Engineering Co., 50 Church St., N.Y.
 Blanchard Machine Co., Cambridge, Mass.
 Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used)
 See page 26.
 Houchin Machinery Co., Hawthorne, N. J.
 J. M. Lehmann Co., 250 W. Broadway, N.Y.
 See page 39.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.
 Patterson Foundry & Mch. Co.,
 E. Liverpool, Ohio

MILLS, SOAP FLAKE

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

Houchin Machy. Co., Hawthorne, N.J.

Huber Machine Co., 265—46th St., Brooklyn

J. M. Lehmann Co., 250 W. Broadway, N.Y.
See page 39.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

J. H. Day Co., 1144 Harrison Ave., Cincinnati
Huber Machine Co., 265—46th St., Brooklyn
Kent Machine Works, 39 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)

See page 45.

Patterson Foundry & Mch. Co.,

E. Liverpool, Ohio

Chas. Ross & Son Co.,

148 Classon Ave., Brooklyn

Waterville Fndry. & Machine Co.,
Waterville, N.Y.

MILLS, TOILET SOAP

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

Houchin Machinery Co., Hawthorne, N.J.

Huber Machine Co., 265—46th St., Brooklyn

J. M. Lehmann Co., 250 W. Broadway, N.Y.
See page 39.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

MINERAL OIL, WHITE, see WHITE MINERAL OIL**MINERAL SOAP STOCK, see PETROLATUM****MIRBANE OIL (Nitrobenzene)**

(see also Essential Oils)

Calco Chemical Co., Bound Brook, N. J.
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.

Monsanto Chemical Works, 1724 S. 2nd St.,
St. Louis

National Aniline & Chemical Co.,
40 Rector St., N.Y.
Naugatuck Chemical Co., 1790 Broadway, N.Y.

MIXING MACHINERY (Dry Products)

Abbe Engineering Co., 50 Church St., N.Y.
Besser Mfg. Co., Alpena, Mich.

Blystone Mfg. Co., Cambridge Springs, Pa.

Chain Belt Co., Milwaukee, Wis.

Consol. Concrete Machinery Corp.,
Adrian, Mich.

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

Construction Machinery Co., Waterloo, Iowa
J. H. Day Co., 1144 Harrison Ave., Cincinnati
W. E. Dunn Mfg. Co., Holland, Mich.
J. B. Foote Foundry Co., Fredericktown, O.
B. F. Gump Co., 431 S. Clinton St., Chicago
S. Howes Co., Inc., Silver Creek, N.Y.
Huber Machine Co., 265—46th St., Brooklyn
E. B. Kelley Co., 130 W. 42nd St., N.Y.
Koehring Co., 31st St. and Concordia Ave.,
Milwaukee, Wis.

Lancaster Iron Works, Lancaster, Pa.
Lansing Co., Lansing, Mich.

MacLellan Mixer Co., Owensboro, Ky.
Newmann Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago (Used)

See page 45.

Ransome Concrete Machinery Co.,
Dunellen, N. J.

Republic Iron Works, Tecumseh, Mich.

Ernest Scott & Co., Fall River, Mass.

T. L. Smith Co., Milwaukee, Wis.

F. J. Stokes Machine Co., Philadelphia, Pa.
Struthers-Wells Titusville Corp., Warren, Pa.

Vol-u-meter Co., 710 Ohio St., Buffalo

MIXERS (Portable)

Alsop Engineering Corp., 39 W. 60th St., N.Y.
Beach-Russ Co., 50 Church St., N.Y.

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

J. H. Day Co., 1144 Harrison Ave., Chicago
Houchin Machy. Co., Hawthorne, N.J.
Huber Machine Co., 265—46th St., Brooklyn
Kent Machine Works, 37 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
Littleford Bros., 443 S. Pearl St., Cincinnati
Frank B. Lomax Co., 365 W. Oak St., Chgo.
Mixing Equipment Co., Inc., 1024 Garson Ave.,
Rochester, N.Y.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

Patterson Fdy. & Mch. Co., E. Liverpool, O.
Pfaudler Co., 89 East Ave., Rochester, N.Y.

MIXING MACHINERY (General)

Alsop Engineering Corp., 39 W. 60th St., N.Y.
Baker-Perkins Co., 250 Park Ave., N.Y.

Beach-Russ Co., 50 Church St., N.Y.

Arthur Colton Co., Detroit

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

J. H. Day Co., 1144 Harrison Ave., Cincinnati
Houchin Machy. Co., Hawthorne, N.J.
S. Howes Co., Inc., Silver Creek, N.Y.
Huber Machine Co., 265—46th St., Brooklyn
Kent Machine Works, 37 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.

J. M. Lehmann Co., 248 West B'way, N.Y.
See page 39.

Littleford Bros., 443 E. Pearl St., Cincinnati
Mixing Equipment Co., Inc., 1024 Garson Ave.,
Rochester, N.Y.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)

See page 45.

MIXING MACHINERY (Change Can)

Abbe Engineering Co., 50 Church St., N.Y.

Arthur Colton Co., Detroit, Mich.

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

MIXING MACHINERY (General), (Contd.)

Patterson Foundry & Mach. Co.,
East Liverpool, Ohio
Pfaudler Co., 89 East Ave., Rochester, N.Y.
Read Machinery Co., York, Pa.
Chas. Ross & Son Co.,
148 Classon Ave., Brooklyn
Ernest Scott & Co., Fall River, Mass.
Sowers Mfg. Co., 1296 Niagara St.,
Buffalo, N.Y.
F. J. Stokes Mach. Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
Turbo Mixer Corp., 250 W. 43rd St., N.Y.
Waterville Foundry & Machine Co.,
Waterville, N.Y.

**MIXING TANKS (see TANKS, WOODEN,
STEEL and GLASS, MIXING)****MONTAN WAX (See WAXES)****MOP HANDLES**

Algoma Mfg. Co., Green Bay, Wis.
Amer. Standard Mfg. Co., 2509 Lime St.,
Chicago
Stanley H. Coffin, 12 Pearl St., Boston
Continental Car-Na-Var Corp., Brazil, Ind.
Eagle Woodenware Mfg. Co., Hamilton, O.
Erie Mop & Wringer Co., East Syracuse, N.Y.
Howard Dustless Duster Co., Boston
W. E. Kautenberg Co., Freeport, Ill.
Massasoit Mfg. Co., 350 Bway., N.Y.
Sanitary Mfg. Co., 926 Ft. Wayne Ave.,
Indianapolis
Silver-Chamberlin Co., Clayton, N.Y.

MOP WRINGERS AND PAILS

Stanley H. Coffin, 12 Pearl St., Boston
Eagle Woodenware Mfg. Co., Hamilton, Ohio
Geuder, Paesche & Frey, Milwaukee, Wis.
Illinois Duster Co., 1944 Webster Ave., Chgo.
S. C. Lawlor Co., 124 N. Curtis St., Chicago
Muskegon Sanitary Supply Co.,
Muskegon Heights, Mich.
Sanitary Mfg. Co., 926 Ft. Wayne Ave.,
Indianapolis
Tarbox Lever Corp., 61 Chandler St., Buffalo
White Mop Wringer Co., Fultonville, N.Y.

MOPPING TANKS AND TRUCKS

Eagle Woodenware Mfg. Co., Hamilton, O.
S. C. Lawlor Co., 124 N. Curtis St., Chicago
F. H. Lawson Co., Cincinnati
White Mop Wringer Co., Fultonville, N.Y.

MOPS

Alabama Broom & Mattress Co.,
Huntsville, Ala.
Algoma Mfg. Co., Green Bay, Wis.
Amer. Standard Mfg. Co., 2509 Lime St.,
Chicago
Bay State Brush and Mop Co., Woburn, Mass.
Burdett-Rose Mfg. Co., 6100 Independence Rd.,
Kansas City, Mo.

California Cotton Mills Co., Oakland, Calif.
Chattanooga Broom & Mop Co.,
Chattanooga, Tenn.
Clark Bros. Mfg. Co., 34 N. Front St., Phila.
Stanley H. Coffin, 12 Pearl St., Boston, Mass.
Continental Car-Na-Var Corp., Brazil, Ind.
Eagle Woodenware Mfg. Co., Hamilton, O.
Howard Dustless Duster Co., Boston, Mass.
W. E. Kautenberg Co., P. O. Box 255,
Freeport, Ill.
Pioneer Mfg. Co., Cleveland, Ohio
Rubon Woodfin'g & Prod. Co., 500 W. 7th St.,
Kansas City, Mo.
Sanitary Mfg. Co., 926 Ft. Wayne Ave.,
Indianapolis
Silver-Chamberlain Co., Clayton, N. J.
T. C. Smyth Mfg. Co., Union City, Ind.
Tate Mfg. Co., Boston, Mass.
M. J. Toohey & Co., Fall River, Mass.
Tuscaloosa Mills, Tuscaloosa, Ala.
Yocma Mills, Water Valley, Miss.

MOSQUITO LARVAECIDES

Baird & McGuire, Inc., Holbrook, Mass.

See page 16.

Chemical Supply Co., 2450 Canal Rd., Cleveland
Clifton Chemical Co., 246 Front St., N.Y.

See page 24.

B. R. Elk & Co., Garfield, N.J.
Fuld Bros., 2308 Frederick Ave., Baltimore
Hockwald Chemical Co., 30 Bluxome St.,
San Francisco
William E. Jordan & Bro.,
2590 Atlantic Ave., Brooklyn
Kay Chemical Co., 329 Ringold St., Baltimore
Koppers Products Co., Koppers Bldg.,
Pittsburgh
Marshall Prods., Inc., 806 N. 1st St., St. Louis
Merck & Co., Rahway, N. J.
North Coast Chem. & Soap Wks.,
Seattle, Wash.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
White Tar Co., Kearny, N. J.

See page 37.

MOTTLED SOAPS

Armour Soap Wks., 1355 W. 31st St., Chicago

See page 14.

Cincinnati Soap Co., Cincinnati
Hewitt Soap Co., Dayton, O.
Lightfoot Schultz Co., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles
Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.
National Soap Co., P. O. Box 1613,
Tacoma, Wash.
Geo. A. Schmidt Co., 236 W. North Ave., Chgo.
M. Werle Co., Cincinnati, O.
Allen B. Wrisley Co., 6801 W. 65th St., Chgo.

**MUSKS, ARTIFICIAL (See AROMATIC
CHEMICALS)****NAPHTHA, see SOLVENT NAPHTHA****NAPHTHALENE**

American-British Chem. Supplies, Inc.,
180 Madison Ave., N.Y.
Barrett Co., 40 Rector St., N.Y.

See page 10.

See page 18.

NAPHTHALENE, (Contd.)

Dominion Tar & Chem. Co., Ltd.,
430 Canada Cement Bldg., Montreal
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
William E. Jordan & Bro.,
2590 Atlantic Ave., Brooklyn
Koppers Products Co., Koppers Bldg.,
Pittsburgh See page 37.
White Tar Co., Kearny, N.J. See page 37.

NAPHTHALENE SULFONATES

E. I. du Pont De Nemours & Co.,
Wilmington, Del. See page 4.
General Dyestuffs Corp., 230-5th Ave., N.Y.
National Aniline & Chem. Co., 40 Rector St.,
N.Y.

NEROLI OIL (Artificial) see METHYL ANTHRANILATE**NICOTINE COMPOUNDS**

Hood River Spray Co., Hood River, Ore.
Sanocide Spray Co., Fennville, Mich.
Tobacco By-Products & Chem. Corp.,
Columbia Bldg., Louisville, Ky.

NOVELTY SOAPS

Diamond Soap Co.,
1 Lowden St., Elizabeth, N.J.
Lightfoot Schultz Co., 1412 Park Ave.,
Hoboken, N.J.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago
Yardley & Co., 452-5th Ave., N.Y.

OIL MILL EQUIPMENT

Y. D. Anderson Co., 1935 W. 96th St., Cleveland
Buckeye Iron & Brass Works, Dayton, O.
French Oil Mill Mach. Co., Piqua, O.
William Garrigue Co., 9 S. Clinton St., Chicago
Robinson, Butler, Hemingway & Co.,
Box 371, Bound Brook, N.J.
Ernest Scott & Co., Fall River, Mass.
Struthers-Wells Co., Warren, Pa.
Wurster & Sanger, Inc.,
5201 Kenwood Ave., Chicago

OIL HYDROGENATION PLANTS

William Garrigue Co., 9 S. Clinton St., Chicago
Robinson, Butler, Hemingway & Co.,
Box 371, Bound Brook, N.J.
Wurster & Sanger, Inc.,
5201 Kenwood Ave., Chicago

OIL SOAP

Antiseptol Liquid Soap Co.,
5424 N. W. Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.
Cincinnati Soap Co., Cincinnati

Clifton Chemical Co., 246 Front St., N.Y.
See page 24.
Davies Young Soap Co., Dayton, O.
See page 28.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Fischer Oil & Chem. Co., Bond Hill, Cinn.
Fuld Bros., 2308 Frederick Ave., Baltimore
Genseke Bros.,
West 48th Pl. & Whipple St., Chgo.

Harley Soap Co., 2832 E. Pacific St., Phila.
Harris Soap Co., Buffalo, N.Y.
Holman Soap Co., 3100 Fox St., Chicago, Ill.
Jansen Soap & Chemical Co.,
324 Leavenworth St., San Francisco, Cal.

Kranich Soap Co., 54 Richards St., Brooklyn
Marshall Products, Inc., 806 N. 1st St., St. Louis
North Coast Chem. & Soap Works,
Seattle, Wash.

Palmer Products, Inc., Waukesha, Wis.
Paper Makers Chemical Corp.,
Kalamazoo, Mich.

Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Phoenix Oil Co., Cleveland, O.

Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago

Selig Co., 336 Marietta St., Atlanta, Ga.

U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

Allen B. Wrisley Co., 6801 W. 65th St., Chicago

OLEIC ACID (see RED OIL)**OLIVE OIL (Commercial)**

(see also Brokers and Dealers)

Balfour, Guthrie & Co., 67 Wall St., N.Y.
Irving R. Boody & Co., 99 Wall St., N.Y.
W. R. Grace & Co., 7 Hanover Sq., N.Y.
Otto A. C. Hagen Co., Ledger Bldg., Phila.
Leghorn Trading Co., 155 E. 44th St., N.Y.

See page 38.

Francisco Martin, 80 Wall St., N.Y.
Rayner & Stonington, 79 Wall St., N.Y.

See inside back cover.

E. M. Sergeant Co., 350 Fifth Ave., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y.

See page 54.

Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

See inside back cover.

Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.

See page 65.

OLIVE OIL FOOTS

(see also Brokers and Dealers)

John B. Dewsnap & Co., Pierce Ave.,
Long Island City, N.Y.
Otto A. C. Hagen Co., Ledger Bldg., Phila.
Leghorn Trading Co., 155 E. 44th St., N.Y.

See page 38.

Rayner & Stonington, 79 Wall St., N.Y.

See inside back cover.

E. M. Sergeant Co., 350 Fifth Ave., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y.

See page 54.

Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

See inside back cover.

Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.

See page 65.

OLIVE OIL SOAPS

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.
Cincinnati Soap Co., Cincinnati
Davies Young Soap Co., Dayton, Ohio
See page 28.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Hewitt Soap Co., Dayton, Ohio
Hockwald Chemical Co., 30 Bluxome St.,
San Francisco
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Levant Castile Soap Co., 327-36th St.,
Brooklyn, N.Y.
Los Angeles Soap Co., Los Angeles
Geo. E. Marsh Co., Lynn, Mass.
Peck's Prods. Co., 5224 N. 2nd St.,
St. Louis, Mo.
Procter & Gamble Co., Cincinnati, O.
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago
Jacques Wolfe & Co., Passaic, N.J.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

ORANGE OIL (See ESSENTIAL OILS)**OXALIC ACID**
(see also Dealers)

Amer. Cyanamid & Chem. Corp.,
535-5th Ave., N.Y. See page 11.
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
Grasselli Chemical Co., 1800 Guardian Bldg.,
Cleveland See page 34.
Innis, Speiden & Company,
117 Liberty St., N.Y. See page 36.
Mallinckrodt Chemical Wks., St. Louis, Mo.
Merck & Co., Rahway, N. J. See page 44.
E. M. Sergeant Co., 350-5th Ave., N.Y.
Truempy, Faesy & Besthoff, Inc.,
22 E. 40th St., N.Y.
Joseph Turner & Co., 500-5th Ave., N.Y.
Victor Chemical Works,
141 W. Jackson Blvd., Chicago See page 63.

**PACKAGING MACHINERY (see CARTON-
ING MACHY., FILLING MACHY.,
WEIGHING EQUIP., WRAPPING
MACHY.)****PAILS (Fibre) (see BARRELS, FIBRE)****PAILS (Steel)**

Fein's Tin Can Co., 284 Furman St., Bklyn.
Geuder, Paeschke & Frey Co., Milwaukee
Niles Steel Prods. Co., 465 Walnut St.,
Niles, Ohio
Ohio Pail Co., Middlefield, Ohio
Pittsburgh Can Co., Pittsburgh, Pa.
Pressed Steel Tank Co., 5717 Greenfield Ave.,
Milwaukee, Wisc.
John Trageser Steam Copper Works,
Grand Ave., Maspeth, L. I., N.Y.
Vulcan Stamping & Mfg. Co., 4035 W. Lake St.,
Chicago
Wheeling Corrugating Co., Wheeling, W. Va.
Wilson & Bennett Mfg. Co., 6532 Menard St.,
Chicago

PAILS (Wooden)

Beaver Mills, Keene, N. H.
Eagle Woodenware Mig. Co., Hamilton, O.
Gambrinus Cooperage Works, 930 Mason St.,
Louisville, Ky.
Impervious Package Co., Keene, N. H.
Menasha Woodenware Co., Menasha, Wis.
Richmond Cedar Works, Richmond, Va.

PALM KERNEL OIL

(see also Brokers and Dealers)
Irving R. Boody & Co., 99 Wall St., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave.,
Chicago
Spencer Kellogg & Sons, Buffalo, N.Y.
W. & A. Leaman, 17 State St., N.Y.
Rayner & Stonington, 79 Wall St., N.Y.
See inside back cover.
C. F. Simonin's Sons, Tioga & Belgrade Sts.,
Philadelphia
Smith-Weihman Co., 15 Moore St., N.Y.
See page 54.
United Africa Co., 67 Wall St., N.Y.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.
Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
See page 65.

PALM OIL

(see also Brokers and Dealers)
Irving R. Boody & Co., 99 Wall St., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave.,
Chicago
W. & A. Leaman, 17 State St., N.Y.
Leghorn Trading Co., 155 E. 44th St., N.Y.
See page 38.
Rayner & Stonington, 79 Wall St., N.Y.
See inside back cover.
Smith-Weihman Co., 15 Moore St., N.Y.
See page 54.
Stein, Hall & Co., 285 Madison Ave.,
N.Y. (Sumatra)
United Africa Co., 67 Wall St., N.Y.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.
Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
See page 65.
Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

PAPER CANS (see CANS)**PAPER (Corrugated)**

Consolidated Paper Co., Monroe, Mich.
Container Corp. of America,
111 W. Washington St., Chicago
Robert Gair Co., 420 Lexington Ave., N.Y.
Hinde & Dauch Paper Co., Sandusky, O.
F. J. Kress Box Co., 29-30 Liberty Ave.,
Pittsburgh

PAPER CUPS

F. N. Burt Co., Batavia, N.Y.
Individual Drinking Cup Co., Easton, Pa.
Vortex Mfg. Co., Chicago

PAPER (Fancy Wrapping)

Aluminum Co. of America, 120 B'way, N.Y.
 Beekman Paper & Card Co.,
 137 Varick St., N.Y.
 A. M. Collins Mfg. Co., 1518 Walnut St., Phila.
 Louis DeJonge & Co., 69 Duane St., N.Y.
 DuPont Cellophane Co., 350-5th Ave., N.Y.
 C. J. Fox Co., 236 Abron St., Providence, R. I.
 Fox Paper Co., Lockland, Cincinnati, O.
 Hampden Glazed Paper & Card Co.,
 Holyoke, Mass.
 Henderson Lithographing Co., Cincinnati
 Keller-Dorian Paper Co., 110 Fifth Ave., N.Y.
 Kramer & Lange, 32 West 24th St., N.Y.
 New England Card & Paper Co.,
 10 Hanover St., Springfield, Mass.
 Pictorial Package Co., Aurora, Ill.
 Marquette Lithograph Co.,
 730 N. Franklin St., Chicago
 Nashua Gummmed & Coated Paper Co.,
 Nashua, N. H.
 Potomac Lithograph Mfg. Co.,
 Washington, D. C.
 Richardson Co., Lockland, O.
 Geo. Schmitt & Co., Grand & Florence Sts.,
 Brooklyn
 Louis Schulman Co., 465 Broome St., N.Y.
 Sylvania Industrial Corp., Chanin Bldg., N.Y.
 Tamm & Co., 66 Duane St., N.Y.
 Transcello Paper Co., Milwaukee, Wis.
 U. S. Printing & Lithographing Co.,
 Cincinnati, O.
 Walther & Co., Inc., 114 Harrison St., Bklyn.
 Whiting-Paterson Co., Inc., 320-13th St.,
 Philadelphia
 Chas. W. Williams & Co., Inc.,
 303 Lafayette St., N.Y.

PAPER TOWELS

Brown Co., Portland, Me.
 Scott Paper Co., Chester, Pa.
 Straubel Paper Co., Green Bay, Wis.
 U. S. Envelope Co., Lititz, Pa.

PARA BLOCKS (see DEODORIZING BLOCKS)**PARADICHLORBENZENE**

Dow Chemical Co., Midland, Mich.
 See page 29.
 E. I. du Pont de Nemours & Co.,
 Wilmington, Del.
 Hooker Electrochemical Co.,
 60 E. 42nd St., N.Y.
 Monsanto Chemical Works, 1724 S. 2nd St.,
 St. Louis
 Niagara Alkali Co., 15 E. 41st St., N.Y.
 See page 46.
 Solvay Sales Corp., 61 Broadway, N.Y.
 See page 56.

PARAFFIN

Borne-Schrymser Co., 17 Battery Pl., N.Y.
 E. A. Bromund Co., 258 Broadway, N.Y.
 A. C. Drury & Co., 219 North East Water St.,
 Chicago
 Gulf Refining Co., Frick Annex, Pittsburgh
 Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.

R. F. Revson Co., 91-7th Ave., N.Y.
 Sinclair Refining Co., 45 Nassau St., N.Y.
 Smith & Nichols, 121 Maiden Lane, N.Y.
 Standard Oil Co., (N.J.) 26 Broadway, N.Y.
 Strohmeyer & Arpe Co.,
 139 Franklin St., N.Y.
 Texas Co., 135 E. 42nd St., N.Y.

PARAFFIN OILS

Deep Rock Oil Corp., 155 N. Clark St., Chicago
 A. C. Drury & Co., 219 North East Water St.,
 Chicago
 Gulf Refining Co., Pittsburgh
 S. Schwabacher & Co., 59 Pearl St., N.Y.
 Sherwood Petroleum Co., Bush Terminal Bldg.
 No. 1, Brooklyn, N.Y.
 Sinclair Refining Co., 45 Nassau St., N.Y.
 Shell Petroleum Corp., Shell Bldg., St. Louis
 Skelly Oil Co., 2534 Madison Ave.,
 Kansas City, Mo.

PARAFORMALDEHYDE

E. I. du Pont de Nemours & Co.,
 Wilmington, Del.
 See page 4.
 Heyden Chemical Co., 50 Union Sq., N.Y.
 Mallinckrodt Chem. Wks.,
 2nd & Mallinckrodt Sts., St. Louis, Mo.
 Merck & Co., Rahway, N. J.
 See page 44.
 Sherka Chemical Co., 75 West St., N.Y.

PARIS GREEN

Chipman Chemical Engineering Co.,
 Bound Brook, N. J.
 Dow Chemical Co., Midland, Mich.
 See page 29.
 Fred L. Lavanburg Co., 90 John St., N.Y.
 Sherwin-Williams Co., Cleveland

PASTES (see ADHESIVES)**PATCHOULI OIL (see ESSENTIAL OILS)****PEACH KERNEL OIL (see ESSENTIAL**

PEANUT OIL
(see also Brokers and Dealers)
 Aspegren & Co., Produce Exchange, N.Y.
 Balfour, Guthrie & Co., 67 Wall St., N.Y.
 Irving R. Boody Co., 132 Front St., N.Y.
 Durkee Famous Foods, Inc., 2670 Elston Ave.,
 Chicago
 Spencer Kellogg & Sons, Buffalo, N.Y.
 Mitsui & Co., 350-5th Ave., N.Y.
 Procter & Gamble Co., Cincinnati, O.
 Rayner & Stonington, 79 Wall St., N.Y.
 See inside back cover.
 Southern Cotton Oil Co.,
 Produce Exchange, N.Y.
 Wecoline Prods. Co., 15 E. 26th St., N.Y.
 Welch, Holme & Clark Co., Inc.,
 563 Greenwich St., N.Y.
 See inside back cover.
 Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
 See page 65.

PEARL ASH (see POTASSIUM CARBONATE)**PENNYROYAL OIL (see ESSENTIAL OILS)****PEPPERMINT OIL (see ESSENTIAL OILS)****PERCOLATORS**

Brighton Copper Works, 2163 Western Ave., Cincinnati
 Arthur Colton Co., Detroit, Mich.
Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Farlinger Rice Co., 56 N. 19th St.,
 East Orange, N. J.
Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.
 Pfaudler Co., 89 East Ave., Rochester, N.Y.
 Ernest Scott & Co., Fall River, Mass.
 F. J. Stokes Machine Co., Philadelphia
 Wurster & Sanger, 5201 Kenwood Av., Chicago

PERFUMING COMPOUNDS

van Ameringen-Haebler, Inc.,
 315—4th Ave., N.Y. See page 12.
 Irving Bennett & Co., 64 W. 23rd St., N.Y.
Budd Aromatic Chemical Co.,
 667 Washington St., N.Y. See page 22.
Ph. Chaleyer, Inc., 200 Varick St., N.Y.
 See page 23.
 Antoine Chiris Co., 147 Waverly Pl., N.Y.
 Compagnie Parento, Croton, N.Y.
 Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
 See page 30.
A. C. Drury & Co., 219 North East Water St.,
 Chicago See page 31.
E. I. du Pont de Nemours & Co.,
 Wilmington, Del. See page 4.
 Evergreen Chemical Co., 160—5th Ave., N.Y.
 Felton Chemical Co., 599 Johnson Ave.,
 Brooklyn
 Benj. French, Inc., 160—5th Ave., N.Y.
 Fritzsche Brothers, Inc., 78 Beekman St., N.Y.
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.
 See page 33.
 Heine & Co., 54 Cliff St., N.Y.
 Industrial Organics, 131 E. 45th St., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.
 See page 40.
 Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
 A. Maschmeijer, Jr., Inc., 43 W. 10th St., N.Y.
 Neuman-Buslee & Wolfe, 224 W. Huron St.,
 Chicago
 Pfaltz & Bauer, 300 Pearl St., N.Y.
 Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.
 Riviera Products Co., 215 W. Ohio St.,
 Chicago, Ill.
 H. C. Ryland, Inc., 161 Water St., N.Y.
 Edwin Seebach Co., 912 Broadway, N.Y.
 C. A. Seguin Co., 500 N. Dearborn St., Chicago
 Wm. G. Sibbald & Co., 201 S. 2nd Ave.,
 Maywood, Ill.
 Geo. Silver Import Co., 461—4th Ave., N.Y.
Ungerer & Co., 13 W. 20th St., N.Y.
 See page 61.
 United Laboratories, 8 E. 12th St., N.Y.

Van Dyk & Co., 57 Wilkinson Ave.,
 Jersey City, N.J. See page 62.
 Albert Verley, Inc., 11 E. Austin Ave., Chicago

PETIT GRAIN OIL (see ESSENTIAL OILS)**PETROLATUM (Petroleum Jelly)**

Borne-Scrymser & Co., 17 Battery Pl., N.Y.
 Cheseborough Mfg. Co., 17 State St., N.Y.
 Malone Oil Co., 2199 E. 18th St., Cleveland
 Pennsylvania Refining Co., Karns City, Pa.
 S. Schwabacher & Co., 59 Pearl St., N.Y.
 (Liquid)
 Shell Petroleum Corp., Shell Bldg., St. Louis
 Sherwood Petroleum Co., Bush Terminal Bldg.,
 Brooklyn, N.Y.
 Sinclair Refining Co., 45 Nassau St., N.Y.
L. Sonneborn Sons, 88 Lexington Ave., N.Y.
 See page 58.
 Standard Oil Co., (N.J.), 26 Broadway, N.Y.

**PETROLEUM BASES (For Agricultural Sprays,
 Horticultural Sprays, Cattle Sprays, Insecti-
 cides, Polishes, etc.)**

American Mineral Spirits Co., 330 S. Mich.,
 Chicago
 Beacon Oil Co., Everett, Mass.
 Empire Oil Co., Oil City, Pa.
 Gulf Refining Co., Frick Annex, Pittsburgh
 Indian Refining Co., Lawrenceville, Ind.
 Oil Service Co., Warren, Pa.
 Pennsylvania Ref. Co., Karns City, Pa.
 Pennzoil Co., Oil City, Pa.
 Refiners Petroleum Co., 122 S. Mich. Blvd.,
 Chicago
 Shell Petroleum Corp., Shell Bldg., St. Louis
 Sherwood Petroleum Co., Bush Terminal Bldg.,
 No. 1, Brooklyn
 Sinclair Refining Co., 45 Nassau St., N.Y.
 Skelly Oil Co., 2534 Madison Ave.,
 Kansas City, Mo.
L. Sonneborn Sons, 88 Lexington Ave., N.Y.
 See page 58.
 Standard Oil Co., (Ind.) Whiting, Ind.
 Standard Oil Co., (N.J.) 26 Broadway, N.Y.
 Sun Oil Co., 1608 Walnut St., Philadelphia
 Texas Co., 135 E. 42nd St., N.Y.
 Tidewater Oil Co., 11 Broadway, N.Y.

PHENOL (Carbolic Acid)

Barrett Company, 40 Rector St., N.Y.
 See page 19.
Dow Chemical Co., Midland, Mich.
 See page 29.
 Heyden Chemical Corp., 50 Union Sq., N.Y.
Innis Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 William E. Jordan & Bro.,
 2590 Atlantic Ave., Brooklyn.
Koppers Prods. Co., Koppers Bldg., Pittsburgh
 See page 37.
Merck & Co., Rahway, N. J. See page 44.
 Monsanto Chemical Works, 1724 S. 2nd St.,
 St. Louis, Mo.

**PHENYL ACETIC ALDEHYDE (see
 AROMATIC CHEMICALS)**

PHENYL ETHYL ALCOHOL (see AROMATIC CHEMICALS)**PHOSPHOROUS PASTE**

John Opitz, Inc., 220 E. 42nd St., N.Y.
 Sennewald Drug Co., 8th & Hickory Sts.,
 St. Louis
 Joseph Turner & Co., 500—5th Ave., N.Y.

PINE OIL

American Turp. & Tar Co.,
 810 S. Broad St., New Orleans
 General Naval Stores Co., 75 E. 45th St., N.Y.
 Gulf Naval Stores Supply Co.,
 Whitney Bldg., New Orleans
 Hercules Powder Co., Wilmington, Del.
 National Turp. Prods. Co., Gulf Point, Fla.
 Taylor, Lowenstein & Co., Mobile, Ala.

PINE OIL DISINFECTANTS (see DISINFECTANTS, PINE OIL)**PINE NEEDLE OIL (see ESSENTIAL OILS)****PINE SCRUB SOAPS (see SCRUBBING SOAPS)****PIPE COILS**

Alloy Prods. Corp., 221 Madison St.,
 Waukesha, Wisc.
 Brighton Copper Works,
 2163 Western Ave., Cinn.
 Harrisburg Pipe & Bending Co.,
 Harrisburg, Pa.
 Hartford Tube Products Co., Hartford, Conn.
 Houchin Machy. Co., Hawthorne, N.J.
 National Pipe Bending Co., New Haven, Conn.
 Philadelphia Pipe Bending Co., 4100 N. 5th St.,
 Philadelphia
 Pittsburgh Pipe Coil & Bending Co.,
 61 Bridge St., Etna, Pa.
 Rempe Co., 340 N. Sacramento Blvd., Chicago
 Whitlock Coil Pipe Co., Hartford, Conn.

PLASTIC PRODUCTS

Bakelite Corp., Bound Brook, N.J.
 General Electric Co., West Lynn, Mass.
 General Plastics, Inc., North Tonawanda, N.Y.
 Goodyear Tire & Rubber Co., Akron, O.
 Resinox Corp., Terre Haute, Ind.
 Toledo Synthetic Prods., Toledo, O.

PLODDERS

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Houchin Machinery Co., Hawthorne, N.J.
 Huber Machine Co., 265—46th St., Brooklyn
 J. M. Lehmann Co., 248 West B'way, N.Y.
 See page 39.

Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.

POISONED SEEDS

Sennewald Drug Co., Hickory & 8th St.,
 St. Louis
 Solicide Laboratories, Montclair, N.J.
 W. R. Sweeney, Salisbury, Mo.

POLISH, AUTO

Armiger Chem. Co., 2155 W. Austin Ave.,
 Chicago
 Champion Mfg. Co., 322 S. Erie St.,
 Indianapolis, Ind.
 Chemical Supply Co., 2450 Canal Rd., Cleveland
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Harley Soap Co., 2832 E. Pacific St., Phila.
 R. M. Hollingshead Co., 840 Cooper St.,
 Camden, N. J.
 Hull Co., 305 Washington St., Brooklyn
 International Metal Polish Co.,
 Twill St. & Belt, R.R., Indianapolis
 Kay Chemical Co., 329 Ringold St., Baltimore
 Marshall Prods., Inc., 806 N. 1st St., St. Louis
 National Oil Prods. Co., Harrison, N.J.
 Palmer Products, Inc., Waukesha, Wis.
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Shores Co., Cedar Rapids, Ia.
 Solshine Mfg. Co., 17 Caldwell St., Boston
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 John T. Stanley Co., 640 W. 30th St., N.Y.

POLISH, FLOOR

Algoma Mfg. Co., Green Bay, Wis.
 Armiger Chem. Co., 2155 W. Austin Ave.,
 Chicago
 Chemical Supply Co., 2450 Canal Rd., Cleveland
 Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.
 Continental Car-Na-Var Corp., Brazil, Ind.
 Creco Co., Inc., Creco Bldg.,
 Long Island City, N.Y.
 Davies Young Soap Co., Dayton, O.
 See page 28.
 Fay Co., 130 Madison Ave., N.Y.
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Harley Soap Co., 2832 E. Pacific St., Phila.
 Hockwald Chemical Co., 30 Bluxome St.,
 San Francisco
 Hull Co., 305 Washington St., Brooklyn
 R. M. Hollingshead Co., 840 Cooper St.,
 Camden, N. J.
 International Metal Polish Co., Indianapolis
 Kay Chemical Co., 329 Ringold St., Baltimore
 Marshall Prods., Inc., 806 N. 1st St., St. Louis
 Pacific Chem. Co., 1241 N. Main St.,
 Los Angeles
 Palmer Products, Inc., Waukesha, Wis.
 Peck's Prod. Co., 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Uncle Sam Chem. Co., 359 Cherry St., N.Y.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Windsor Wax Co., 50 Church St., N.Y.

POLISH, FURNITURE

Algoma Mfg Co., Green Bay, Wis.
 Armiger Chem. Co., 2155 W. Austin Ave.,
 Chicago
 Chamberlain-Haber Chem. Co.,
 1105 W. 11th St., Cleveland
 Chemical Supply Co., 2450 Canal Rd., Cleveland
Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.

Crystal Labs., 21 W. Park Way, N.S.,
 Pittsburgh

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 B. R. Elk & Co., Garfield, N.J.
 Fuld Bros., 2308 Frederick Ave., Baltimore

General Oil & Chem. Co.,

126 S. Charles St., Baltimore

Goulard & Olena, 140 Liberty St., N.Y.

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chemical Co., 30 Bluxome St.,

San Francisco

R. M. Hollingshead Co., 840 Cooper St.,

Camden, N. J.

International Metal Polish Co.,

Twill St. & Belt. R.R., Indianapolis

Jansen Soap & Chemical Co.,

324 Leavenworth St., San Francisco, Cal.

Kay Chemical Co., 329 Ringold St., Baltimore

Marshall Products, Inc., 806 N. 1st St., St. Louis

National Oil Products Co., Harrison, N. J.

North Coast Soap & Chem. Wks.,

Seattle, Wash.

Palmer Products, Inc., Waukesha, Wis.

Peck's Prods. Co., 5224 N. 2nd St., St. Louis

Pro-Tex-All Co., Evansville, Ind.

Theo. B. Robertson Prods. Co.,

700 W. Division St., Chicago

Sanitary Mfg. Co., 926 Ft. Wayne Ave.,

Indianapolis

Shores Co., Cedar Rapids, Ia.

Solshine Mfg. Co., 17 Caldwell St., Boston

Uncle Sam Chem. Co., 359 Cherry St., N.Y.

U. S. Sanitary Specialties Corp.,

435 S. Western Ave., Chicago

Windsor Wax Co., 50 Church St., N.Y.

Peck's Prods. Co., 5224 N. 2nd St., St. Louis
 Pro-Tex-All Co., Evansville, Ind.
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Rochester Germicide Co., 16 Dowling Pl.,
 Rochester, N.Y.
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Shores Co., Cedar Rapids, Ia.
 Solshine Mfg. Co., 17 Caldwell St., Boston
 Trojan Prods. & Mfg. Co., 3101 S. Wabash Ave.,
 Chicago
 Uncle Sam Chem. Co., 359 Cherry St., N.Y.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago

POLISH, WAX

Clifton Chem. Co., 246 Front St., N.Y.
 See page 24.

Continental Car-Na-Var Corp., Brazil, Ind.

Davies-Young Soap Co., Dayton, O.
 See page 28.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 B. R. Elk & Co., Garfield, N.J.

Fuld Bros., 2308 Frederick Ave., Baltimore

Hockwald Chemical Co., 30 Bluxome St.,

San Francisco

R. M. Hollingshead Co., 840 Cooper St.,

Camden, N. J.

Hull Co., 305 Washington St., Brooklyn

International Metal Polish Co.,

Twill St. & Belt. R.R., Indianapolis

Marshall Products, Inc., 806 N. 1st St., St. Louis

National Oil Products Co., Harrison, N. J.

Palmer Products, Inc., Waukesha, Wis.

Peck's Prods. Co., 5224 N. 2nd St., St. Louis

Theo. B. Robertson Prods. Co.,

700 W. Division St., Chicago

Rochester Germicide Co., 16 Dowling Pl.,

Rochester, N.Y.

Selig Co., 336 Marietta St., Atlanta, Ga.

John T. Stanley Co., 640 W. 30th St., N.Y.

Uncle Sam Chem. Co., 359 Cherry St., N.Y.

U. S. Sanitary Specialties Corp.,

435 S. Western Ave., Chicago

Windsor Wax Co., Inc., 50 Church St., N.Y.

POLISH, METAL

Armiger Chem. Co., Inc., 2155 W. Austin Ave.,
 Chicago, Ill.

W. D. Carpenter Co., Syracuse, N.Y.

Chamberlain-Haber Chem. Co.,

1105 W. 11th St., Cleveland

Chemical Supply Co., 2450 Canal Rd., Cleveland

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

B. R. Elk & Co., Garfield, N.J.

Fuld Bros., 2308 Frederick Ave., Baltimore

Elkay Prods. Corp., 542-1st Ave., N.Y.

Goulard & Olena, 140 Liberty St., N.Y.

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chemical Co., 30 Bluxome St.,

San Francisco

R. M. Hollingshead Co., 840 Cooper St.,

Camden, N. J.

Hull Co., 305 Washington St., Brooklyn

International Metal Polish Co.,

Twill St. & Belt. R.R., Indianapolis

Kay Chemical Co., 329 Ringold St., Baltimore

Marshall Products, Inc., 806 N. 1st St., St. Louis

National Oil Products Co., Harrison, N. J.

Pacific Chem. Co., 1421 N. Main St.,

Los Angeles

Palmer Products, Inc., Waukesha, Wis.

POTASH (Caustic) (see CAUSTIC POTASH)**POTASSIUM CARBONATE**

American Cyanamid & Chemicals Corp.,
 535-5th Ave., N.Y.
 See page 11.

E. I. du Pont de Nemours & Co.,
 Wilmington, Del.
 See page 4.

Grasselli Chem. Co., 1300 Guardian Bldg.,
 Cleveland
 See page 34.

Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.

Jungmann & Co., 157 Chambers St., N.Y.

Harshaw Chem. Co., Cleveland

E. M. Sergeant Co., 350-5th Ave., N.Y.

Truempy, Faesy & Besthoff,

22 E. 40th St., N.Y.

Jos. Turner & Co., 500-5th Ave., N.Y.

Welch, Holme & Clark Co., Inc.,

563 Greenwich St., N.Y.

See inside back cover.

POTASSIUM PERSULFATE

Buffalo Elec. Chem. Co.,
River Rd. & Sawyer Ave., Buffalo
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
Jungmann & Co., 157 Chambers St., N.Y.
Pfaltz & Bauer, 300 Pearl St., N.Y.
Jos. Turner & Co., 500—5th Ave., N.Y.

POWDER GUNS (see BELLOWS)**POWDERED SOAP (see SOAP, POWDERED)**
Do not confuse with SOAP POWDERS**PRESSES (Automatic Soap)**

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Houchin Machy. Co., Hawthorne, N.J.
R. A. Jones & Co., Cincinnati, O.
J. M. Lehmann Co., 248 West Broadway, N.Y. See page 39.
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.

PRESSES (Foot) (for Soap and Para Cakes)

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Houchin Machinery Co., Hawthorne, N.J.
Huber Machine Co., 265—46th St., Brooklyn
J. M. Lehmann Co., 248 West Broadway, N.Y. See page 39.
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used) See page 45.
F. J. Stokes Mach. Co., Philadelphia, Pa.

PRIVATE FORMULAS (see under individual products)**PUMICE STONE**

Allied Industrial Prods. Co.,
17 N. Elizabeth St., Chicago
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
Goris & Arnstein, 3700 Racine Ave., Chicago
K. F. Griffiths & Co., 110 E. 42nd St., N.Y.
Hammill & Gillespie, 225 Broadway, N.Y.
National Pumice Stone Co., foot of Halsey St.,
Astoria, L. I.
Jas. H. Rhodes & Co., 153 W. Austin Ave.,
Chicago
Tammis Silica Co., 228 N. La Salle St., Chicago
Whittaker, Clark & Daniels, 245 Front St., N.Y.

PUMP GUNS (for Insecticides) (see SPRAYERS, see BELLOWS)**PUMPS**

Aldrich Pump Co., 1 Pine St., Allentown, Pa.
Alsop Engineering Corp., 39 W. 60th St., N.Y.
American Steam Pump Co.,
Battle Creek, Mich.

Beach-Russ Co., 50 Church St., N.Y.
Blackmer Rotary Pump Co.,
Grand Rapids, Mich.
Buffalo Forge Co., 490 Broadway, Buffalo, N.Y.
M. T. Davidson Co., 154 Nassau St., N.Y.
Foster Pump Works, 54 Washington St.,
Bklyn., N.Y.
Goulds Pumps, Inc., Seneca Falls, N.Y.
Guyton & Cumfer Mfg. Co., 4441 Fillmore St.,
Chicago (Jacketed)
Houchin Machinery Co., Hawthorne, N.J.
Huber Mach. Co., 265—46th St., Brooklyn
Ingersoll-Rand Co., 11 Broadway, N.Y.
Karl Kiefer Machine Co., Cincinnati
Lobee Pump & Machine Co., 129 Dearborn St.,
Buffalo, N.Y.
P. H. & F. M. Roots Co., Connersville, Ind.
T. Shriner & Co., Harrison, N.J.
F. J. Stokes Machine Co., Philadelphia, Pa.
Taber Pump Co., 278 Elm St., Buffalo, N.Y.
115 Broadway, N.Y.
Worthington Pump & Machinery Co.,
115 Broadway, N.Y.

PYRETHRUM

Wm. Benkert & Co., 100 Gold St., N.Y. See page 19.

Derris, Inc., 79 Wall St., N.Y.
J. L. Hopkins & Co., 220 Broadway, N.Y.
McCormick & Co., Baltimore, Md. See page 41.
McLaughlin, Gormley King Co., 1715—5th St.,
S. E., Minneapolis, Minn.
Murray & Nickell Mfg. Co.,
2608 Arthington St., Chicago
S. B. Penick & Co., 132 Nassau St., N.Y. See page 47.
John Powell & Co., 114 E. 32nd St., N.Y. See page 49.
Allaire Woodward & Co., Peoria, Ill.

PYRETHRUM EXTRACT

Baird & McGuire, Inc., Holbrook, Mass. See page 16.

Wm. Benkert & Co., 100 Gold St., N.Y. See page 19.

Chemical Supply Co., 2450 Canal Rd., Cleveland
Cino Chem. Prods. Co., 210 Main St., Cincinnati

J. L. Hopkins & Co., 220 Broadway, N.Y.

McCormick & Co., Baltimore See page 41.

McLaughlin Gormley King Co.,
1715—5th St., S. E., Minneapolis

Murray & Nickell Mfg. Co.,
2608 Arthington St., Chicago

S. B. Penick & Co., 132 Nassau St., N.Y. See page 47.

John Powell & Co., 114 E. 32nd St., N.Y. See page 49.

Seacoast Labs., Inc., 156 Perry St., N.Y.
Sherwood Petroleum Corp., Bush Terminal,
Bklyn.

Allaire Woodward & Co., Peoria, Ill.

RAPESEED OIL

Balfour, Guthrie & Co., 67 Wall St., N.Y.
Irving R. Boody & Co., 99 Wall St., N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Leghorn Trading Co., 155 E. 44th St., N.Y. See page 38.

RAPESEED OIL, (Contd.)

National Oil Prods. Co., Harrison, N.J.
 Rayner & Stonington, 79 Wall St., N.Y.
 See inside back cover.
 Smith-Weihman Co., 15 Moore St., N.Y.
 See page 54.
 Welch, Holme & Clark Co., Inc.,
 563 Greenwich St., N.Y.
 See inside back cover.

Wurster & Sanger, 5201 Kenwood St., Chicago
 Zaremba Co., Buffalo, N.Y.

RAT EXTERMINATING PRODUCTS

Chemical Supply Co., 2450 Canal Rd., Cleveland
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Guarantee Exterminating Co.,
 11 W. 42nd St., N.Y.
 Hockwald Chemical Co., 30 Bluxome St.,
 San Francisco
 J. L. Hopkins & Co., 220 Broadway, N.Y.
 Murray & Nickell Mfg. Co.,
 2608 Arthington St., Chicago
 John Opitz, Inc., Long Island City, N.Y.
 John Powell & Co., 114 E. 32nd St., N.Y.
 See page 49.
 Ratin Laboratories, Inc., 112 Broad St., N.Y.
 Soilicide Laboratories, Montclair, N.J.
 Sennewald Drug Co., 8th & Hickory Sts.,
 St. Louis

REFRIGERATING EQUIPMENT

York Ice Machine Co., York, Pa.

REMELTERS

Houchin Machinery Co., Hawthorne, N.J.
 Huber Mach. Co., 265-46th St., Brooklyn
 Lancaster Iron Works, 564 S. Prince St.,
 Lancaster, Pa.
 Patterson Foundry & Mach Co.,
 East Liverpool, O.
 Struthers-Wells Co., Warren, Pa.

RHODINOL (see AROMATIC CHEMICALS)**ROACH POWDER (see HOUSEHOLD INSECTICIDE POWDER)****ROSE OIL (see ESSENTIAL OILS)****ROSEMARY OIL (see ESSENTIAL OILS)****ROSIN**

Antwerp Naval Stores Co., Savannah, Ga.
 General Naval Stores Co.,
 75 E. 45th St., N.Y. (Wood)
 Georgia Rosin Prods. Co., Brunswick, Ga.
 Guignon & Green, 17 Battery Pl., N.Y.
 Hercules Powder Co.,
 Wilmington, Del. (Wood)
 Industrial Chem. Sales Co., Inc.,
 230 Park Ave., N.Y.
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.
 Taylor, Lowenstein & Co., Mobile, Ala.
 G. A. Wharry & Co., 15 Moore St., N.Y.

ROTENONE (see DERRIS)**ROTTEN STONE**

Allied Industrial Prods. Co.,
 17 N. Elizabeth St., Chicago
 Chas. B. Chrystal Co., 11 Park Pl., N.Y.
 K. F. Griffiths Co., 110 E. 42nd St., N.Y.
 Goris & Arstein, 3700 Racine Ave., Chicago
 Hammill & Gillespie, 225 Broadway, N.Y.
 National Pumice Stone Co., Inc.,
 Foot of Halsey St., Astoria, L. I.
 Jas. H. Rhodes & Co., 153 W. Austin Ave.,
 Chicago
 Tamms Silica Co., 229 N. La Salle St., Chicago
 Whittaker Clark & Daniels 245 Front St., N.Y.
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

RUBBER STOPPERS (see LABORATORY APPARATUS)**REFINING EQUIPMENT (Glycerine)**

E. B. Badger Co., 25 Pitts St., Boston
 Buffalo Foundry & Machine Co., Buffalo, N.Y.
 Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 William Garrigue & Co., 9 S. Clinton St.,
 Chicago
 Lancaster Iron Works, 564 S. Prince St.,
 Lancaster, Pa.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.
 Ernest Scott & Co., Fall River, Mass.
 Walter E. Simmons Co., Boston
 Struthers-Wells Co., Warren, Pa.
 Swenson Evaporator Co., Harvey, Ill.

SAFROL (see AROMATIC CHEMICALS)**SAL SODA**

(see also Dealers)

Church & Dwight Co., 70 Pine St., N.Y.
General Chem. Co., 40 Rector St., N.Y.
See page 32.

Grasselli Chemical Co., 1800 Guardian Bldg.,
Cleveland
See page 34.

Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.

Mathieson Alkali Wks., 250 Park Ave., N.Y.
Mechling Bros. Chemical Co., Camden, N.J.
Michigan Alkali Co., 10 E. 40th St., N.Y.
Paper Makers Chemical Corp.,
Kalamazoo, Mich.
Solvay Sales Corp., 61 Broadway, N.Y.
See page 56.

SALT (Common Salt)

(see also Dealers)

Columbia Alkali Co., Empire State Bldg., N.Y.
See page 25.

Diamond Alkali Co., First Nat. Bk. Bldg.,
Pittsburgh

Dow Chemical Co., Midland, Mich.
See page 29.

Hooker Electrochemical Co.,
60 E. 42nd St., N.Y.
See page 35.

International Salt Co., 475-5th Ave., N.Y.

Jefferson Salt & Mining Co., Louisville, Ky.

LeRoy Salt Co., LeRoy, N.Y.

Myles Salt Co., 1007 Camp St.,
New Orleans, La.

Pomeroy Salt Co., Pomeroy, Ohio

Remington Salt Co., Ithaca, N.Y.

Saginaw Salt Prods. Co., Saginaw, Mich.

Solvay Sales Corp., 61 Broadway, N.Y.
See page 56.

SANDALWOOD OIL

van Ameringen-Haebler, Inc.,
350 W. 31st St., N.Y.
See page 12.

W. J. Bush & Co., 11 E. 38th St., N.Y.

Cox, Aspden & Fletcher, 39 Cortlandt St., N.Y.

Dodge & Olcott Co., 180 Varick St., N.Y.

P. R. Dreyer Inc., 12 E. 12th St., N.Y.
See page 30.

Benj. French, Inc., 160-5th Ave., N.Y.

Fritzsch Brothers, Inc., 78 Beekman St., N.Y.

Imperial Export Co., 11 Moore St., N.Y.
(Australian)

Geo. Lueders & Co., 427 Washington St., N.Y.
See page 40.

Magnus, Mabee & Reynard, 32 Cliff St., N.Y.

Neumann-Buslee & Wolfe, 224 W. Huron St.,
Chicago

Orbis Products Trading Co.,
215 Pearl St., N.Y.

Ungerer & Co., 13 W. 20th St., N.Y.
See page 61.

Albert Verley, Inc., 11 E. Austin Ave., Chicago

SAPONIN (Ext. Soap Bark)

Dodge & Olcott Co., 180 Varick St., N.Y.

A. C. Drury & Co., 219 North East Water St.,
Chicago
See page 31.

Fritzsch Brothers, Inc., 78 Beekman St., N.Y.
Hoffman-LaRoche Chem. Works,
49 Cliff St., N.Y.

Interstate Color Co., 5 Beekman St., N.Y.
Jungmann & Co., 157 Chambers St., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.

Merck & Co., Rahway, N. J.
Murray & Nickell Mfg. Co.,
2008 Arthington St., Chicago

S. B. Penick & Co., 132 Nassau St., N.Y.
Pfaltz & Bauer, 300 Pearl St., N.Y.

Ungerer & Co., 13 W. 20th St., N.Y.
See page 61.

SASSAFRAS (Artificial) (see AROMATIC CHEMICALS)**SCIENTIFIC INSTRUMENTS (see INSTRUMENTS)****SCOURING POWDERS**

American Soap Powder Wks., Inc.,
98 Van Dyke St., Brooklyn

Armour Soap Wks., 1355 W. 31st St., Chicago

See page 14.

Cincinnati Soap Co., Cincinnati
Cudahy Packing Co., Chicago

Du Bois Soap Co., Cincinnati, O.
Hockwald Chem. Co., 30 Bluxome St.,
San Francisco

Holman Soap Co., 3100 Fox St., Chicago, Ill.

Jansen Soap & Chemical Co.,
324 Leavenworth St., San Francisco, Cal.

H. Kohnstamm & Co., 91 Park Pl., N.Y.

Los Angeles Soap Co., Los Angeles
National Milling & Chem. Co., Manayunk,
Phila.

Pacific Chem. Co., 1412 N. Main St.,
Los Angeles

Paper Makers Chemical Corp.,
Kalamazoo, Mich.

Peck's Prods. Co., 5224 N. 2nd St., St. Louis

Poland Soap Works, Anniston, Ala.

Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago

Stevens Soap Corp., 200 Sullivan St., Brooklyn

Swann Corp., 420 Lexington Ave., N.Y.

See page 60.

Swift & Co., Chicago
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SCOURING SOAPS (Bars)

Armour Soap Wks., 1355 W. 31st St., Chicago

See page 14.

Hewitt Soap Co., Dayton, O.

Holman Soap Co., 3100 Fox St., Chicago, Ill.

Los Angeles Soap Co., Los Angeles

National Soap Co., P. O. Box 1613,
Tacoma, Wash.

Procter & Gamble, Cincinnati, O.

Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago

John T. Stanley Co., 640 W. 30th St., N.Y.

Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SCREENS (Screening Equipment)

C. O. Bartlett & Snow Co., 6200 Harvard Ave.,
Cleveland, O.

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

B. F. Gump Co., 431 S. Clinton St., Chicago

J. H. Day Co., Cincinnati

J. M. Lehmann Co., 248 W. Broadway, N.Y.
See page 39.

Ludlow-Sawyer Wire Co., St. Louis, Mo.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

Sprout, Waldron & Co., Muncy, Pa.

Stedman's Fdy. & Machine Works,
Aurora, Ind.

Sturtevant Mill Co., Boston, Mass.

W. S. Taylor Co., Cleveland, O.

Wickwire Spencer Steel Co.,
41 E. 42nd St., N.Y.

SCRUBBING MACHINES (see FLOOR MACHINES)**SCRUBBING SOAPS, LIQUID**

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.

Chemical Compounding Corp., 262 Huron St.,
Bklyn., N.Y.

Chemical Supply Co., 2450 Canal Rd., Cleveland

Clifton Chem. Co., 246 Front St., N.Y.
See page 24.

Continental Car-Na-Var Corp., Brazil, Ind.

Creco Co., Inc., Creco Bldg.,
Long Island City, N.Y.

Davies-Young Soap Co., Dayton, Ohio
See page 28.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

Fischer Oil & Chem. Co., Bond Hill, Cinn.

Fuld Bros., 2308 Frederick Ave., Baltimore

Genseke Bros., West 48th Pl. & Whipple St.,
Chicago

Gould & Olena, 140 Liberty St., N.Y.

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chem. Co., 30 Bluxome St.,
San Francisco

Holman Soap Co., 3100 Fox St., Chicago, Ill.
Hull Co., 305 Washington St., Brooklyn

Jansen Soap & Chemical Co.,
324 Leavenworth St., San Francisco, Cal.

H. Kohnstamm & Co., 91 Park Pl., N.Y.

Kranich Soap Co., 54 Richards St., Brooklyn

Marshall Prods., Inc., 806 N. 1st St., St. Louis

National Oil Prods. Co., Harrison, N.J.

North Coast Chem. & Soap Wks.,
Seattle, Wash.

Palmer Products, Inc., Waukesha, Wis.

Paper Makers Chemical Corp.,
Kalamazoo, Mich.

Peck's Prods. Co., 5224 N. 2nd St., St. Louis

Procter & Gamble Co., Cincinnati, O.

Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago

Sanitary Mfg. Co., 926 Ft. Wayne Ave.,
Indianapolis, Ind.

Silmo Chemical Co., Vineland, N.J.

U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

West Disinfecting Co., Long Island City, N.Y.

SEALING MACHINERY (Bags)

B. F. Gump Co., 431 S. Clinton St., Chicago

New Jersey Machine Corp., Hoboken, N.J.

SEALING MACHINERY (Cartons)

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

J. L. Ferguson Co., Joliet, Ill.

R. A. Jones & Co., Cincinnati, O.

New Jersey Machine Corp., Hoboken, N.J.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

Pneumatic Scale Corp., Norfolk Downs, Mass.
See page 48.

F. B. Redington Co., 112 S. Sangamon St.,
Chicago

Stokes & Smith Co., Philadelphia, Pa.
See page 59.

Triangle Package Machinery Co.,
910 Spaulding Ave., Chicago

SEALING MACHINERY (Cases)

H. R. Bliss Co., Niagara Falls, N.Y.

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.

J. L. Ferguson Co., Joliet, Ill.

McStay Machine Co., 3036 E. 5th St.,
Los Angeles

J. L. Morrison Co., Niagara Falls, N.Y.

Nashua Package Sealing Co., Nashua, N. H.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

Standard Sealing Equipment Corp.,
Rawson St., Long Island City, N.Y.

SESKUICARBONATE OF SODA (for Bath Salts, etc.), (see SODIUM SESKUICARBONATE)**SHAMPOO BASE**

Antiseptol Liquid Soap Co.,
5424 N. W. Highway, Chicago

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.

Cincinnati Soap Co., Cincinnati

Clifton Chemical Co., 246 Front St., N.Y.
See page 24.

Columbia Soap & Chem. Co., Inc., 217 Clara St.,
San Francisco

Davies-Young Soap Co., Dayton, O.
See page 28.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago

Fuld Bros., 2308 Frederick Ave., Baltimore

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chem. Co., 30 Bluxome St.,
San Francisco

Holman Soap Co., 3100 Fox St., Chicago, Ill.
Jansen Soap & Chem. Co., 324 Leavenworth St.,
San Francisco

Kranich Soap Co., 54 Richards St., Brooklyn

H. Kohnstamm & Co., 91 Park Pl., N.Y.

Los Angeles Soap Co., Los Angeles

Marshall Prods., Inc., 806 N. 1st St. St. Louis

National Oil Products Co., Harrison, N.J.

New York Soap Corp., 294 Pearl St., N.Y.

SHAMPOO BASE, (Contd.)

Palmer Products, Inc., Waukesha, Wis.
 Peck's Prod. Co., 5224 N. 2nd St., St. Louis
John Powell & Co., 114 E. 32nd St., N.Y.
 See page 50.

Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 Werner G. Smith Co., Cleveland
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Jacques Wolfe & Co., Passaic, N.J.
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAMPOOS, LIQUID

Antiseptol Liquid Soap Co.,
 5424 N. W. Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Bobrick Mfg. Corp., 111 Garey St., Los Angeles
 Cincinnati Soap Co., Cincinnati
Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.

Davies-Young Soap Co., Dayton, O.
 See page 28.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Harley Soap Co., 2832 E. Pacific St., Phila.
 Hockwald Chem. Co., 30 Bluxome St.,
 San Francisco
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Jansen Soap & Chem. Co., 324 Leavenworth St.,
 San Francisco
 Kranich Soap Co., 54 Richards St., Brooklyn
 Lightfoot Schultz Co., 1412 Park Ave.,
 Hoboken, N. J.

Los Angeles Soap Co., Los Angeles
 Marshall Prods., Inc., 806 N. 1st St. St. Louis
 National Oil Products Co., Harrison, N.J.
 New York Soap Corp., 294 Pearl St., N.Y.
 North Coast Soap & Chem. Wks.,
 Seattle, Wash.
 Palmer Products, Inc., Waukesha, Wis.
 Peck's Prods. Co., 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 Shores Co., Cedar Rapids, Ia.
 Werner G. Smith Co., Cleveland
 John T. Stanley Co., 640 W. 30th St., N.Y.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Vliet Soap Co., 638 Monroe St., Brooklyn
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago
 Chas. W. Young & Co., Phila.

SHAMPOOS, POWDER AND CAKE

Cincinnati Soap Co., Cincinnati
Davies-Young Soap Co., Dayton, O.
 See page 28.
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Lightfoot Schultz Co., 1412 Park Ave.,
 Hoboken, N. J.
 North Coast Chem. & Soap, Wks.,
 Seattle, Wash.
 Peck's Prods. Co., 5224 N. 2nd St., St. Louis
John Powell & Co., 114 E. 32nd St., N.Y.
 See page 50.

J. T. Robertson Co., 147 Richmond Ave.,
 Syracuse, N.Y.
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAMPOOS, SOAPLESS

National Oil Products Co., Harrison, N.J.
 Richards Chemical Works, Jersey City, N.J.

SHAVING CREAM

Cincinnati Soap Co., Cincinnati
Clifton Chem. Co., 246 Front St., N.Y.
 See page 24.
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Lightfoot Schultz Co., 1412 Park Ave.,
 Hoboken, N. J.
J. T. Robertson Co., 147 Richmond Ave.,
 Syracuse, N.Y.
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 Shores Co., Cedar Rapids, Ia.
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAVING CREAM BASE

John Powell & Co., 114 E. 32nd St., N.Y.
 See page 50.
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAVING SOAP, STICKS

Cincinnati Soap Co.,
 7th & Elm St., Cincinnati
 Colgate-Palmolive-Peet Co., Chicago
 J. Eavenson & Sons, Del & Penn Sts.,
 Camden, N. J.
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 Lightfoot Schultz Co., 1412 Park Ave.,
 Hoboken, N. J.
 Los Angeles Soap Co., Los Angeles
J. T. Robertson Co., 147 Richmond Ave.,
 Syracuse, N.Y.
 Geo. A. Schmidt Co., 236 W. North Ave.,
 Chicago
John T. Stanley Co., 640 W. 30th St., N.Y.
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHIPPING CASES (see BOXES)**SHEEP DIPS (see CATTLE DIPS)****SHELLAC**

Barrett Varnish Co., 2242 Belmont Ave.,
 Chicago
 Berry Bros., 211 Leib St., Detroit, Mich.
 Chas. Comerford Shellac Co., 509 Third Ave.,
 Brooklyn, N.Y.
 Gillespie-Rogers-Pyatt Co., 80 John St., N.Y.
 A. R. Haeuser Co., 52 Warren St., Brooklyn
 George H. Lincks, 123 Front St., N.Y.
 Mac-Lac-Kasebier-Chatfield Corp., 80 Cliff St.,
 N.Y.
 A. G. Watt Co., 7016 Euclid Ave., Cleveland, O.
 Wm. Zinsser & Co., 516 W. 59th St., N.Y.

SIFTER TOP CANS (see CANS, Sifter Top)**SILICA**

Chas. B. Chrystal Co., 11 Park Pl., N.Y.
 Goris & Arnstein, 3700 Racine Ave., Chicago
 K. F. Griffiths & Co., 110 E. 42nd St., N.Y.
 Hammill & Gillespie, 225 Broadway, N.Y.
 Harshaw Chem. Co., Cleveland
 Illinois Silica Co., Cairo, Ill.
 Industrial Chem. Sales Co., Inc.,
 230 Park Ave., N.Y.

Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.

International Silica Co., Cairo, Ill.
 N. J. Pulverizing Co., 15 Park Row, N.Y.
 Pennsylvania Pulverizing Co., Lewistown, Pa.
 R. F. Revson Co., 91-7th Ave., N.Y.
 Jas. H. Rhodes & Co., 153 W. Austin Ave.,
 Chicago
 Silica Prods. Co., 700 Baltimore Ave.,
 Kansas City, Mo.
 Tamms Silica Co., 228 N. La Salle St., Chicago
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

SILICATE OF SODA (see SODIUM SILICATE)**SLABBERS**

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.

Houchin Machinery Co., Hawthorne, N.J.
 Huber Mach. Co., 265-46th St., Brooklyn
J. M. Lehmann Co., 248 West Broadway, N.Y.
 See page 39.

Newmann Tallow & Soap Machinery Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.

Stein-Brill Corp., 183 Varick St., N.Y. (Used)

SOAP, CASTILE (see CASTILE SOAP)**SOAP, CHIP (see CHIP SOAP)****SOAP COLORS (see also Perfuming Compounds)**

American Aniline Prod., Inc.,
 50 Union Sq., N.Y.
 Stanley Doggett, Inc., 75 Varick St., N.Y.
A. C. Drury & Co., 219 North East Water St., Chicago
 See page 31.

Dyestuffs & Chemicals, Inc.,
 11th & Monroe Sts., St. Louis
 Fezandie & Sperrle, 205 Fulton St., N.Y.
 Geigy Co., 89 Barclay St., N.Y.
 General Dyestuffs Corp., 230-5th Ave., N.Y.
 Interstate Color Co., 5 Beekman St., N.Y.
 H. Kohnstamm & Co., 91 Park Pl., N.Y.
 Leeben Chem. Co., 389 Washington St., N.Y.
 National Aniline & Chem. Co.,
 40 Rector St., N.Y.

Pylam Products Co., 799 Greenwich St., N.Y.
 See page 52.

Sandoz Chem. Wks., 61 Van Dam St., N.Y.

**Welch, Holme & Clark Co., Inc.,
 563 Greenwich St., N.Y. (Export)**
 See inside back cover.

SOAP DIES

Anthony J. Fries, 715 Sycamore St., Cincinnati
 Houchin Machinery Co., Hawthorne, N.J.
 Huber Mach. Co., 265-46th St., Brooklyn
 Jas. H. Matthews & Co., 480 Canal St., N.Y.
 Mooney & Bueter, 564 W. Randolph St.,
 Chicago
 I. Schwartz Engraving & Die Works,
 38 W. 21st St., N.Y.

SOAP DISPENSERS (Liquid)

Bobrick Chemical Corp., 111-117 Garey St.,
 Los Angeles
Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.

Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Fulb Bros., 2308 Frederick Ave., Baltimore
 Imperial Brass Mfg. Co., 1200 W. Harrison St.,
 Chicago

Monmouth Prods. Co., 221 E. 131st St.,
 Cleveland

Moore Bros. Co., 154 Chambers St., N.Y.
 Chas. Morrill, Inc., 100 Lafayette St., N.Y.

Palmer Products, Inc., Waukesha, Wis.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago

SOAP DISPENSERS (Powder)

Bobrick Chemical Corp., 111-117 Garey St.,
 Los Angeles
Clifton Chem. Co., 246 Front St., N.Y.
 See page 24.

Packwood Mfg. Co., St. Louis
 Palmer Products, Inc., Waukesha, Wis.
 Presto Mfg. Co., 4044-20th Ave.,
 Minneapolis, Minn.

Procter & Gamble Co., Cincinnati, O.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 Vasco Products Co., Elmira, N.Y.

SOAP DISPENSING SYSTEMS (Multi-unit with Tanks)

Bobrick Chemical Corp., 111-117 Garey St.,
 Los Angeles
Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.

Creco Co., Inc., Creco Bldg.,
 Long Island City, N.Y.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Moore Bros. Co., 154 Chambers St., N.Y.
 Palmer Products, Inc., Waukesha, Wis.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 West Disinfecting Co., Long Island City, N.Y.

SOAP DRYERS (see DRYERS)**SOAP, FLAKE (see CHIP SOAP)****SOAP FRAMES (see FRAMES)****SOAP KETTLES (see KETTLES)**

SOAP, LINSEED OIL (see LINSEED OIL SOAP)**SOAP MACHINERY**

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Wm. Garrigue & Co., 9 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N.J.
Huber Mach. Co., 265-46th St., Brooklyn
J. M. Lehmann Co., 248 West Broadway, N.Y.
See page 39.
Littleford Bros., 443 E. Pearl St., Cincinnati
Newman Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago (New & Used)
See page 45.
Stein-Brill Corp., 183 Varick St., N.Y.
(New & Used)

SOAP MILLS (see MILLS, TOILET SOAP)**SOAP PERFUMES**

van Ameringen-Haebler, Inc.,
315-4th Ave., N.Y. See page 12.
Irving Bennett & Co., 64 W. 23rd St., N.Y.
Ph. Chaleyer, Inc., 200 Varick St., N.Y.
See page 23.
Compagnie Duval, 121 E. 24th St., N.Y.
Compagnie Parento, Inc.,
Croton-on-Hudson, N.Y.
Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
See page 30.
A. C. Drury & Co., 219 North East Water St., Chicago
See page 31.
E. I. du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
Evergreen Chemical Co., 160-5th Ave., N.Y.
Felton Chemical Co., 599 Johnson Ave.,
Brooklyn
Benj. French, Inc., 160-5th Ave., N.Y.
Fritzche Brothers, Inc., 78 Beekman St., N.Y.
Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.
See page 33.
Heine & Co., 54 Cliff St., N.Y.
Industrial Organics, 131 E. 45th St., N.Y.
Lautier Fils, 47 Cliff St., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.
See page 40.
Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
Neumann-Buslee & Wolfe, 224 W. Huron St.,
Chicago
Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.
Riviera Prods. Co., 215 W. Ohio St., Chicago
H. C. Ryland, Inc., 161 Water St., N.Y.
C. A. Seguin Co., 500 N. Dearborn St., Chicago
Edwin Seebach Co., 912 Broadway, N.Y.
William G. Sibbach & Co., Maywood, Ill.
Synfleur Scientific Labs., Monticello, N.Y.
Ungerer & Co., 13 W. 20th St., N.Y.
See page 61.
United Laboratories, 15 S. William St., N.Y.
Van Dyk & Company, 57 Wilkinson Ave., Jersey City, N.J.
See page 62.
Albert Verley, Inc., 11 E. Austin Ave., Chicago

SOAP PLANTS (Complete)

Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
Wm. Garrigue & Co., 9 So. Clinton St., Chicago

Houchin Machinery Co., Hawthorne, N.J.
Huber Mach. Co., 265-46th St., Brooklyn
J. M. Lehmann Co., 248 W. Broadway, N.Y.
See page 39.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.
Wurster & Sanger, 5201 Kenwood Ave.,
Chicago

SOAP POWDER MILLS (see MILLS, SOAP POWDER)**SOAP, POWDERED (White neutral powdered soap. Do not confuse with Soap Powders.)**

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.
Wm. Benkert & Co., 100 Gold St., N.Y.
See page 19.
Holman Soap Co., 3100 Fox St., Chicago, Ill.
J. L. Hopkins & Co., 220 Broadway, N.Y.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Lightfoot Schultz Co., 1412 Park Ave.,
Hoboken, N. J.
Los Angeles Soap Co., Los Angeles
Geo. E. Marsh Co., Lynn, Mass.
Murray & Nickell Mfg. Co.,
2608 Arthington St., Chicago
Peek & Velsor, 76 William St., N.Y.
S. B. Penick & Co., 132 Nassau St., N.Y.
See page 47.
John Powell & Co., 114 E. 32nd St., N.Y.
See page 50.
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SOAP POWDERS

(Do not confuse with powdered white soap.)

American Soap Powder Wks., Inc.,
98 Van Dyk St., Bklyn.
Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.
Cincinnati Soap Co., Cincinnati
Dobbins Soap Co., Camden, N. J.
Du Bois Soap Co., Cincinnati
J. Eavenson & Sons, Del. & Penn. Sts.,
Camden, N. J.
Hewitt Soap Co., Dayton, O.
Holman Soap Co., 3100 Fox St., Chicago, Ill.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Lever Brothers Co., Cambridge, Mass.
Geo. E. Marsh Co., Lynn, Mass.
National Milling & Chem. Co.,
Manayunk, Phila.
North Coast Soap & Chem. Wks.,
Seattle, Wash.
Paper Makers Chemical Corp.,
Kalamazoo, Mich.
Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
J. T. Robertson Co., Syracuse, N.Y.
Stevens Soap Corp., 200 Sullivan St., Brooklyn
Vasco Prods. Co., Elmira, N.Y.
Vliet Soap Co., 638 Monroe St., Brooklyn
M. Werk Co., St. Bernard, Cincinnati
Chas. W. Young & Co., Phila.

SOAP PRESSES (see PRESSES)**SOAP STOCK***(see also Brokers and Dealers)*

Aspren & Co., Produce Exchange, N.Y.
 Durkee Famous Foods, Inc., 2670 Elston Ave.,
 Chicago
 Portsmouth Cotton Oil Refining Co.,
 Portsmouth, Va.
 Procter & Gamble Co., Cincinnati, O.
Rayner & Stonington, 79 Wall St., N.Y.
See inside back cover.
 Southern Cotton Oil Co.,
 Produce Exchange, N.Y.
 Staley Sales Corp., Decatur, Ill.
 Welch, Holme & Clark Co., Inc.,
 563 Greenwich St., N.Y.
See inside back cover.
 G. A. Wharry & Co., 15 Moore St., N.Y.

SOAP, WHALE OIL (see WHALE OIL SOAP)**SOAPS, AUTO (see AUTO SOAPS)****SOAPS, LIQUID (see LIQUID SOAPS,
 LIQUID SOAP BASE, etc.)****SOAPS, MEDICINAL, CAKE (see
 MEDICINAL SOAPS, CAKE)****SOAPS, MOTTLED (see MOTTLED SOAPS)****SOAPS, PINE SCRUB (see SCRUBBING
 SOAPS)****SOAPS, SCOURING (see SCOURING SOAPS)****SOAPS, SCRUBBING (see SCRUBBING
 SOAPS)****SOAPS, SURGICAL (see SURGICAL SOAPS)****SOAPS, TEXTILE (see TEXTILE SOAPS)****SODA ASH***(see also Dealers)*

Columbia Alkali Co., 350—5th Ave., N.Y.
See page 25.
 Diamond Alkali Co., 1st Nat'l Bank Bldg.,
 Pittsburgh
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
 Mathieson Alkali Works, 250 Park Ave., N.Y.
 Michigan Alkali Co., 10 E. 40th St., N.Y.
Solvay Sales Corp., 61 Broadway, N.Y.
See page 56.

SODA (Modified)*(see also Dealers)*

Columbia Alkali Co., 350—5th Ave., N.Y.
See page 25.
 Diamond Alkali Co., 1st Nat'l Bank Bldg.,
 Pittsburgh
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
 H. Kohnstamm & Co., 91 Park Pl., N.Y.
 Mathieson Alkali Wks., 250 Park Ave., N.Y.
 Mechling Bros. Chemical Co.,
 Line St. & Coopers Creek, Camden, N.J.
 Philadelphia Quartz Co., 121 S. 3rd St.,
 Philadelphia, Pa.
Solvay Sales Corp., 61 Broadway, N.Y.
See page 56.

SODIUM BICARBONATE*(see also Dealers)*

Church & Dwight Co., 70 Pine St., N.Y.
 Diamond Alkali Co., 1st Nat'l Bank Bldg.,
 Pittsburgh
**Grasselli Chemical Co., 1300 Guardian Bldg.,
 Cleveland**
See page 34.
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
 Mathieson Alkali Works, 250 Park Ave., N.Y.
 Mechling Bros. Chemical Co.,
 Line St. & Coopers Creek, Camden, N.J.
Merck & Co., Rahway, N.J.
See page 44.
 Michigan Alkali Co., 10 E. 40th St., N.Y.
 Pennsylvania Salt Mfg. Co., Widener Bldg.,
 Philadelphia
Swann Chemical Co., 420 Lexington Ave., N.Y.
See page 60.
 Victor Chem. Wks., 141 W. Jackson Blvd.,
 Chicago, Ill.
See page 63.

SODIUM BICHROMATE*(see also Dealers)*

**Grasselli Chemical Co., 1300 Guardian Bldg.,
 Cleveland**
See page 34.
 Harshaw Chem. Co., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
 Mutual Chemical Co., 270 Madison Ave., N.Y.
 Natural Products Refining Co.,
 900 Garfield Ave., Jersey City, N.J.

SODIUM CHOLATE (Bile Salt)

Digestive Ferments Co., Detroit
 R. W. Greeff & Co., 10 E. 40th St., N.Y.
 Wilson Labs., 4221 S. Western Ave., Chicago

SODIUM FLUORIDE*(see also Dealers)*

**Amer. Cyanamid & Chem. Corp.,
 535—5th Ave., N.Y.**
See page 11.
 American Fluoride Corp.,
 151 W. 19th St., N.Y.
General Chemical Co., 40 Rector St., N.Y.
See page 32.
 Harshaw Chemical Co., 1945 E. 97th St.,
 Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
 Jungmann & Co., 157 Chambers St., N.Y.
Merck & Co., Rahway, N.J.
See page 44.
 Pfaltz & Bauer, 300 Pearl St., N.Y.

SODIUM HYDROSULFITE*(see also Dealers)*

J. T. Baker Chem. Co., Phillipsburg, N. J.
E. I. du Pont de Nemours & Co.
 Wilmington, Del. See page 4.
 General Dyestuff Corp., 230—5th Ave., N.Y.
Grasselli Chem. Co., 1300 Guardian Bldg.
 Cleveland See page 34.
 Jungmann & Co., 157 Chambers St., N.Y.
 Rohm & Haas Co., Inc.,
 222 W. Washington Sq., Phila.
 Royce Chemical Co., Carlton Hill, N.J.

SODIUM METASILICATE

Cowles Detergent Co., 7016 Euclid Ave.,
 Cleveland
General Chem. Co., 40 Rector St., N.Y.
 See page 32.
Grasselli Chem. Co., 1300 Guardian Bldg.
 Cleveland See page 34.
 Philadelphia Quartz Co., 121 So. 3rd St., Phila.
 Standard Silicate Co., Bond Hill, Cincinnati
Swann Corp., 420 Lexington Ave., N.Y.
 See page 60.

SODIUM NAPHTHENATE

E. I. du Pont De Nemours & Co.
 Wilmington, Del. See page 4.
 General Dyestuffs Corp., 230—5th Ave., N.Y.
 National Aniline & Chem. Co., 40 Rector St., N.Y.

SODIUM PERBORATE*(see also Dealers)*

E. I. du Pont de Nemours & Co.
 Wilmington, Del. See page 4.
Grasselli Chem. Co., 1300 Guardian Bldg.
 Cleveland See page 34.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
Merck & Co., Rahway, N.J. See page 44.

SODIUM SESQUICARBONATE

Diamond Alkali Co., 1st Nat'l Bank Bldg.,
 Pittsburgh
 Mathieson Alkali Wks., 250 Park Ave., N.Y.
 Mechling Bros. Chemical Co.,
 Line St. & Coopers Creek, Camden, N.J.
Solvay Sales Corp., 61 Broadway, N.Y.
 See page 56.

SODIUM SILICATE*(see also Dealers)*

General Chemical Co., 40 Rector St., N.Y.
 See page 32.
Grasselli Chemical Co., 1300 Guardian Bldg.
 Cleveland See page 34.
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Mechling Bros. Chem. Co., Camden, N.J.
 Philadelphia Quartz Co., 121 S. 3rd St.,
 Philadelphia
 Standard Silicate Co., Bond Hill, Cincinnati

SODIUM SILICOFLUORIDE

American Cyanamid & Chem. Corp.
 535—5th Ave., N.Y. See page 11.
American Fluoride Corp.
 151 W. 19th St., N.Y.
Grasselli Chemical Co., 1300 Guardian Bldg.
 Cleveland See page 34.
 Harshaw Chemical Co., 1945 E. 97th St.,
 Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Jungmann & Co., 157 Chambers St., N.Y.
Merck & Co., Rahway, N.J. See page 44.
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

SOLVENT NAPHTHA

Barrett Co., 40 Rector St., N.Y. See page 18.
 William Cooper & Nephews, 1909 Clifton Ave.,
 Chicago
 Deep Rock Oil Corp., 155 N. Clark St., Chicago
 Wm. E. Jordan & Bro., 2590 Atlantic Ave.,
 Brooklyn
Koppers Products Co., Pittsburgh See page 37.
 Neville Chemical Co., Diamond Bank Bldg.,
 Pittsburgh
 Shell Petroleum Corp., Shell Bldg., St. Louis

SOLVENTS, PETROLEUM

American Mineral Spirits Co.,
 330 S. Michigan Ave., Chicago
 Deep Rock Oil Corp., 300 W. Adams St.,
 Chicago
 Skelly Oil Corp., 2534 Madison Ave.,
 Kansas City, Mo.
 Sinclair Refining Co., 45 Nassau St., N.Y.
L. Sonneborn Sons, 88 Lexington Ave., N.Y.
 See page 58.

SOYA BEAN OIL*(see also Brokers and Dealers)*

Balfour-Guthrie Co., 67 Wall St., N.Y.
 Irving R. Boody & Co., 99 Wall St., N.Y.
 Durkee Famous Foods, Inc., 2670 Elston Ave.,
 Chicago
 Early & Daniel Co., Ingalls Bldg., Cincinnati
 William O. Goodrich Co., Milwaukee, Wis.
 W. R. Grace & Co., 7 Hanover Sq., N.Y.
 Spencer Kellogg & Son, Buffalo, N.Y.
 Mitsubishi Shoji Kaisha, 120 Broadway, N.Y.
 Mitsui & Co., 350—5th Ave., N.Y.
 Purina Mills, St. Louis
Rayner & Stonington, 79 Wall St., N.Y.
 See inside back cover.
 Smith-Weihman Co., 15 Moore St., N.Y.
 See page 54.

Staley Sales Corp., Decatur, Ill.
 United Africa Co., 67 Wall St., N.Y.
Welch, Holme & Clark Co., Inc.
 563 Greenwich St., N.Y. See inside back cover.
 Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
 See page 65.

SPERMACETI

E. A. Bromund Co., 258 Broadway, N.Y.
 William H. Dey & Co., 11 Water St., N.Y.

SPERMACETI, (Contd.)

A. C. Drury & Co., 219 North East Water St.,
Chicago See page 31.
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
Neumann-Buslee & Wolfe, 224 W. Huron St.,
Chicago, Ill.
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
R. F. Revson Co., 91-7th Ave., N.Y.
L. A. Salomon & Bro. 216 Pearl St., N.Y.
Werner G. Smith Co., 2191 W. 110th St.,
Cleveland
Smith & Nichols, 121 Maiden Lane, N.Y.
Strohmeyer & Arpe Co.,
139 Franklin St., N.Y.

SPONGES

Allied Industrial Prods. Co.,
17 N. Elizabeth St., Chicago
American Sponge & Chamois Co.,
23 Beekman St., N.Y.
American Standard Mfg. Co.,
2509 Lime St., Chicago
Atlas Sponge Co., 291 Church St., N.Y.
Florida Sponge & Chamois Co.,
71 Gold St., N.Y.
James H. Rhodes & Co., 153 Austin Ave.,
Chicago
Robinson Sponge Co., 1727 Atlantic Ave.,
Brooklyn

SPRAY PERFUMES (see PERFUMING COMPOUNDS)**SPRAY POWDERS (see SOAP POWDERS)****SPRAYERS, COMPRESSED AIR**

Acmeine, Inc., Traverse City, Mich.
Breuer Electric Mfg. Co., 852 Blackhawk St.,
Chicago See page 21.
E. C. Brown Co., Rochester, N.Y.
De Vilbiss Co., Toledo, O.
Dobbins Mfg. Co., North St. Paul St., Minn.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
See page 6.
Imperial Brass Mfg. Co., 1200 W. Harrison St.,
Chicago
Jaeckh Mfg. Co., 3444 Colerain Ave., Cincinnati
Lowell Sprayer Co., Lowell, Mich.
D. B. Smith & Co., Utica, N.Y.
Simmons Paint Spray Brush Co., Dayton, O.
Spraco, Inc., 114 Central St., Somerville, Mass.

SPRAYERS, CONTINUOUS HAND

Acmeine, Inc., Traverse City, Mich.
American Can Co., 230 Park Ave., N.Y.
E. C. Brown Co., Rochester, N.Y.
Continental Can Co., Inc.,
100 E. 42nd St., N.Y. See page 27.
De Vilbiss Co., Toledo, O.
Dobbins Mfg. Co., North St. Paul, Minn.
Electric Sprayit Co., 2102 E. Colfax St.,
South Bend, Ind.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
See page 6.

Jaeckh Mfg. Co., Cincinnati
Lowell Sprayer Co., Lowell, Mich.
D. B. Smith & Co., Utica, N.Y.
J. A. Vaughan Mfg. Co., 34 N. Madison St.,
Tulsa, Okla.
Wm. Vogel & Bros., 37 S. 9th St.,
Brooklyn, N.Y.

SPRAYERS, ELECTRIC

Breuer Electric Mfg. Co., 852 Blackhawk St.,
Chicago See page 21.
De Vilbiss Co., Toledo, O.
Dobbins Mfg. Co., North St. Paul, Minn.
Electric Sprayit Co., South Bend, Ind.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
See page 6.
Lowell Sprayer Co., Lowell, Mich.
Metal Specialties Mfg. Co., 338 S. Kedzie Ave.,
Chicago
D. B. Smith Co., Utica, N.Y.

SPRAYERS, ELECTRIC STEAM

B. Dougherty & Son, 370-7th Ave., N.Y.
Electric Sprayit Co., South Bend, Ind.
Kaz Mfg. Co., Chrysler Bldg., N.Y.
Manning-Bowman Co., Meriden, Conn.

SPRAYERS, for Powders (see Bellows)**SPRAYERS, HAND**

Acmeine, Inc., Traverse City, Mich.
E. C. Brown Co., Rochester, N.Y.
Continental Can Co., 100 E. 42nd St., N.Y.
See page 27.
De Vilbiss Co., Toledo, O.
Dobbins Mfg. Co., North St. Paul, Minn.
Electric Sprayit Co., 2102 E. Colfax St.,
South Bend, Ind.
R. M. Hollingshead Co., Camden, N. J.
Thos. W. Houchin Corp., 9 McPherson Pl.,
Jersey City, N.J.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
See page 6.
Jaeckh Mfg. Co., Cincinnati
Lowell Sprayer Co., Lowell, Mich.
F. E. Meyers & Bro. Co., Ashland, O.
D. B. Smith Co., Utica, N.Y.
J. A. Vaughan Mfg. Co., 34 N. Madison St.,
Tulsa, Okla.
Wm. Vogel & Bros., 37 S. 9th St.,
Brooklyn, N.Y.

SPRAYERS, MOUTH

Larvex Corp., Chrysler Bldg., N.Y.
Lowell Sprayer Co., Lowell, Mich.
D. B. Smith & Co., Utica, N.Y.

SQUILLS (Rodent Poison)

Wm. Benkert & Co., 100 Gold St., N.Y.
See page 19.
J. L. Hopkins & Co., 220 Broadway, N.Y.
McLaughlin Gormley King Co.,
1715-5th St., S. E., Minneapolis, Minn.
Murray & Nickell Mfg. Co.,
2608 Arthington St., Chicago

SQUILLS, (Contd.)

S. B. Penick & Co., 132 Nassau St., N.Y.
See page 47.
John Powell & Co., 114 E. 32nd St., N.Y.
See page 49.

STARCH(see also *Dealers*)

Arabol Mfg. Co., 110 E. 42nd St., N.Y.
Chicago Starch Co., 2708 S. Throop St.,
Chicago
A. C. Drury & Co., 219 North East Water St.,
Chicago
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
Keever Starch Co., Columbus, O.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
National Adhesives Corp.,
820 Greenwich St., N.Y.
National Starch Co., 17 Battery Pl., N.Y.
Staley Sales Corp., Decatur, Ill.
Stein, Hall & Co., 285 Madison Ave., N.Y.

**STEAM SPRAYERS (see SPRAYERS,
ELECTRIC, STEAM)****STEARATES**(see also *Dealers*)

Franks Chem. Prods. Co.,
55-33rd St., Brooklyn
Harshaw Chemical Co., 1945 E. 97th St.,
Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 36.
Mallinckrodt Chem. Wks., St. Louis
Metasap Chemical Co., Harrison, N. J.
M. W. Parsons, Inc., 55 Ann St., N.Y.

STEARIC ACID(see also *Brokers and Dealers*)

Celina Stearic Acid Co., Celina, Ohio
Darling & Co., 4201 S. Ashland Ave., Chicago
Emery Industries, Inc., 4300 Carew Tower,
Cincinnati
A. Gross & Co., Newark, N.J.
Otto A. C. Hagen Co., Ledger Bldg., Phila.
Harkness & Cowing, Ivorydale, Cincinnati
Procter & Gamble Co., Cincinnati
Theobald Animal By-Products Co.,
Kearny, N.J.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y. (Dealer)
See inside back cover.
M. Werk Co., St. Bernard, Cincinnati
Will & Baumer Candle Co., Syracuse, N.Y.
Wilson-Martin Co., Snyder Ave. &
Swanson St., Philadelphia
Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

STEARINE(see also *Brokers and Dealers*)

Celina Stearic Acid Co., Celina, Ohio
Durkee Famous Foods, Inc., 2670 Elston Ave.,
Chicago
Emery Industries, Inc., 4300 Carew Tower,
Cincinnati
Morris & Co., Union Stock Yards, Chicago
Procter & Gamble Co., Cincinnati

RAYNER & STONINGTON, 79 Wall St., N.Y.

See inside back cover.
Louis Stern Sons, Inc., Produce Exchange, N.Y.
Swift & Co., Union Stock Yards, Chicago
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

See inside back cover.
Wilson & Co., 4100 S. Ashland Ave., Chicago

STEEL DRUMS (see DRUMS, STEEL)**STEEL PAILS (see PAILS, STEEL)****STEEL TANKS (see TANKS, STEEL)****STEEL WOOL**

Allied Industrial Products Co.,
19 N. Elizabeth St., Chicago
American Steel Wool Mfg. Co.,
9 Desbrosses St., N.Y.
Brillo Mfg. Co., 205 Water St., Brooklyn, N.Y.
International Steel Wool Co., Springfield, Ohio
James H. Rhodes, 153 W. Austin Ave., Chicago
Whiskette Co., Terre Hill, Pa.

**STORAGE TANKS (see TANKS, STORAGE,
etc.)****SULFONATED OILS**

Kali Mfg. Co., 1408 N. Front St., Philadelphia
National Oil Products Co., Harrison, N. J.
Paper Makers Chemical Corp.,
Kalamazoo, Mich.
Richards Chemical Works, Jersey City, N.J.
Specialty Products Co., 1540 Broadway, N.Y.
Weccoline Prods. Co., 15 E. 26th St., N.Y.
Jacques Wolfe & Co., Passaic, N.J.

SULFONATED FATTY ALCOHOLS

E. I. Du Pont de Nemours & Co.,
Wilmington, Del. See page 4.
General Dyestuffs Corp., 230-5th Ave., N.Y.
Hummel Chemical Co., 90 West St., N.Y.
National Aniline & Chem. Co., 40 Rector St.,
N.Y.
Procter & Gamble Co., Cincinnati
Jacques Wolfe & Co., Passaic, N.J.

SULFOXYLATES (Soap Bleaches)

Rohm & Haas Co., Inc.,
222 W. Washington Sq., Phila.
Jacques Wolfe & Co., Passaic, N.J.

SUPERFATTING AGENTS

Pfaltz & Bauer, 300 Pearl St., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y. See page 52.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.
See inside back cover.

SUPERHEATERS

Brighton Copper Works., 2163 Western Ave.,
Cincinnati
Eureka Machine Co., 2601 Vega Ave., Cleveland
William Garrigue & Co., 9 S. Clinton St.,
Chicago
Ernest Scott & Co., Fall River, Mass.
The Superheater Co., 17 E. 42nd St., N.Y.
Wurster & Sanger, 5201 Kenwood Ave.,
Chicago

SURGICAL SOAPS

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.
Clifton Chem. Co., 246 Front St., N.Y.
See page 24.
Davies-Young Soap Co., Dayton, O.
See page 28.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Fuld Bros., 2308 Frederick Ave., Baltimore
Genseke Bros., W. 48th Pl. & Whipple St.,
Chicago
Harley Soap Co., 2832 E. Pacific St., Phila.
Hockwald Chem. Co., 30 Bluxome St.,
San Francisco
Holman Soap Co., 3100 Fox St., Chicago, Ill.
Jansen Soap & Chem. Co., 324 Leavenworth St.,
San Francisco
Kranich Soap Co., 54 Richards St., Brooklyn
H. Kohnstamm & Co., 91 Park Place, N.Y.
Marshall Prods., Inc., 806 N. 1st St. St. Louis
Peck's Products Co., St. Louis, Mo.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

SWEEPING COMPOUNDS

Champion Mfg. Co., 322 S. Erie St.,
Indianapolis, Ind.
Creco Co., Inc., Creco Bldg.,
Long Island City, N.Y.
Hockwald Chem. Co., 30 Bluxome St.,
San Francisco
Marshall Prods., Inc., 806 N. 1st St. St. Louis
North Coast Soap & Chem Wks.,
Seattle, Wash.
Pacific Chem. Co., 1421 N. Main St.,
Los Angeles
Palmer Products, Inc., Waukesha, Wis.
Theo. B. Robertson Prods. Co.,
700 W. Division St., Chicago
Sanco Prods. Inc., Greenville, O.
Trojan Prods. Co., 241 W. Van Buren St.,
Chicago
Uncle Sam Chem. Co., 359 Cherry St., N.Y.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago

TALC

Binney & Smith Co., 41 E. 42nd St., N.Y.
Blue Ridge Talc Co., Henry, Va.
Chas. B. Chrystal Co., 11 Park Place, N.Y.
A. C. Drury & Co., 219 North East Water St.,
Chicago
Eastern Magnesia Talc Co., Burlington, Vt.
Fezandie & Sperrle, 205 Fulton St., N.Y.

Georgia Talc Co., Asheville, N. C.
Goris & Arnstein, 37th & Racine Ave., Chicago
Hammill & Gillespie, 225 Broadway, N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y.

See page 36.

Los Angeles Talc Co., Los Angeles, Cal.
Charles Mathieu, Inc., 24 Stone St., N.Y.
Pacific Coast Talc Co., Los Angeles, Cal.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
E. M. Sergeant Co., 350-5th Ave., N.Y.
Union Talc Co., 147 Nassau St., N.Y.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

See inside back cover.

Whittaker, Clark & Daniels, 245 Front St., N.Y.
Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

TALLOW

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
See page 14.
Belleville Rendering Co., Belleville, Ill.
Consolidated Rendering Co., 40 N. Market St.,
Boston
Cudahy Packing Co., 111 W. Monroe St.,
Chicago
Darling & Co., 4201 So. Ashland Ave.,
Chicago
Louisville Butch. Hide & Tallow Co.,
Louisville, Ky.
Louis Stern Sons, Inc.,
Produce Exchange, N.Y.
Swift & Co., Union Stock Yards, Chicago
Theobald Animal By-Products Co.,
Kearny, N.J.
Toledo Tallow Co., Toledo, Ohio
Waltham Tallow Co., Waltham, Mass.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

See inside back cover.

Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
See page 65.

Wilson & Co., Union Stock Yards, Chicago
Wilson-Martin Co., Swanson St., Phila.

TALLOW CHIP SOAP (see CHIP SOAPS)**TALLOW OIL**

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
See page 14.
Consolidated Rendering Co., 40 N. Market St.,
Boston
Cudahy Packing Co., 111 W. Monroe St.,
Chicago
Louis Stern Sons, Inc.,
Produce Exchange, N.Y.
Toledo Tallow Co., Toledo, O.
Waltham Tallow Co., Waltham, Mass.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

See inside back cover.

Wilson & Co., Union Stock Yards, Chicago

TANKS (Glass Lined Mixing and Storage)

Alsop Engineering Corp., 39 W. 60th St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used)
See page 26.

**TANKS (Glass Lined Mixing and Storage),
(Contd.)**

Metal Glass Products Corp., Belding, Mich.
Mixing Equipment Co., 1024 Garson Ave.,
Rochester, N.Y.
Newman Tallow & Soap Machy Co.,
1051 W. 35th St., Chicago (Used)
See page 45.
Pfaudler Co., 89 East Ave., Rochester, N.Y.
Vitreous Enamel Co., 6700 Grant Ave.,
Cleveland

TANKS (for Liquid Soap Dispensing Systems)

Bobrick Chemical Corp., 111-117 Garey St.,
Los Angeles
Brighton Copper Works, 2163 Western Ave.,
Cincinnati
Clifton Chemical Co., 246 Front St., N.Y.
See page 24.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Imperial Brass Mfg. Co., 1200 W. Harrison St.,
Chicago
Moore Brothers Co., 154 Chambers St., N.Y.
John Trageser Steam Copper Works,
Grand Ave., Maspeth, L. I., N.Y.
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
Wm. Vogel & Bros., 37 S. 9th St.,
Brooklyn, N.Y.

TANKS (Steel Mixing and Storage)

Alloy Prods. Corp., 221 Madison St.,
Waukesha, Wisc.
Alsop Engineering Corp., 39 W. 60th St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Graver Tank & Mfg. Corp., 28 E. Jackson Blvd.,
Chicago
Houchin Machinery Co., Hawthorne, N.J.
Huber Mach. Co., 265-46th St., Brooklyn
Lancaster Iron Works, 564 S. Prince St.,
Lancaster, Pa.
J. M. Lehmann Co., 248 W. Broadway, N.Y.
See page 39.
Littleford Bros., 451 E. Pearl St., Cincinnati
Newman Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago
See page 45.
Patterson Foundry & Machine Co.,
East Liverpool, Ohio
Petroleum Iron Works, Sharon, Pa.
Pfaudler Co., Rochester, N.Y.
Pioneer Tank & Boiler Co., Tulsa, Okla.
Struthers-Wells Co., Warren, Pa.
John Trageser Steam Copper Works,
Grand St., Maspeth, L. I., N.Y.

TANKS (Wooden Mixing and Storage)

Atlantic Tank & Barrel Co.,
North Bergen, N. J.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) See page 26.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
General Tank Corp., 30 Church St., N.Y.
Hauser-Stander Tank Co., Ivorydale, Cinn.

Kalamazoo Tank & Silo Co.,
Kalamazoo, Mich.

Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 45.

New England Tank & Tower Co.,
Everett, Mass.

Pacific Tank & Pipe Co., 334 Market St.,
San Francisco
Tippett & Wood, Phillipsburg, N. J.

TAR ACID OIL

Baird & McGuire, Inc., Holbrook, Mass.
See page 16.
Barrett Co., 40 Rector St., N.Y. See page 18.
Wm. Cooper & Nephews, 1909 Clifton Ave.,
Chicago
Dominion Tar & Chem. Co., Ltd.,
430, Canada Cement Bldg., Montreal,
Que., Canada
William E. Jordan & Bro., 2590 Atlantic Ave.,
Brooklyn
Koppers Prods. Co., Koppers Bldg., Pittsburgh
See page 37.
Merck & Co., Rahway, N.J. See page 44.
Reilly Tar & Chem. Co., Indianapolis

TERPENELESS OILS (see ESSENTIAL OILS)**TERPENYL ACETATE (see AROMATIC CHEMICALS)****TERPINEOL**

(see also Essential Oils)
Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
See page 30.
Fritzsche Brothers, Inc., 78 Beekman St., N.Y.
Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
Sherka Chemical Co., 75 West St., N.Y.
Ungerer & Co., 13 W. 20th St., N.Y.
See page 61.

TETRALIN

E. I. Du Pont de Nemours & Co.,
Wilmington, Del. See page 4.

TEXTILE SOAPS

Apex Chem. Co., 225 W. 34th St., N.Y.
Arabol Mfg. Co., 110 E. 42nd St., N.Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.
Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
Crystal Soap & Chem. Co., Robbins Ave.,
Philadelphia
Dobbins Soap Co., Camden, N. J.
J. O. Draper Co., Pawtucket, R. I.
J. Eavenson & Sons, Del. & Penn Sts.,
Camden, N. J.

TEXTILE SOAPS, (Contd.)

Enterprise Mill Soap Wks., 2231 N. 12th St., Philadelphia
Genseke Brothers,
 West 48th Pl. & Whipple St., Chicago
 Arnold Hoffman & Co., Providence, R. I.
 H. Kohnstamm & Co., 91 Park Pl., N.Y.
 Laurel Soap Mfg. Co., Tioga St., Phila.
 Los Angeles Soap Co., Los Angeles, Cal.
 Geo. E. Marsh Co., Lynn, Mass.
 Marshall Prods., Inc., 806 N. 1st St., St. Louis
 National Soap Co., 357 South 25th St.,
 Tacoma, Wash.
 Newell Gutradt & Co., 350 Fremont St.,
 San Francisco
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.
 Procter & Gamble Co., Cincinnati
 Rome Soap Mfg. Co., Rome, N.Y.
 Scholler Bros., Philadelphia
 Geo. E. Sherman Co., 153 Classon Ave.,
 Brooklyn, N.Y.
 Staley Sales Corp., Decatur, Ill.
 Ultra Chem. Wks., Inc., Kitay Bldg.,
 Paterson, N. J.
 M. Werk Co., St. Bernard, Cincinnati
 Jacques Wolf & Co., Passaic, N. J.
 Chas. W. Young & Co., 1247 N. 26th St., Phila.

THALLIUM SULFATE (Rat Poisons)

American Fluoride Corp., 151 W. 19th St., N.Y.
 Foote Mineral Co., 1606 Summer St., Phila.
 Hugo Falck & Co., 25 Broadway, N.Y.
 Jungmann & Co., 157 Chambers St., N.Y.
 Ore & Chemical Corp., 40 Rector St., N.Y.
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

THEATRE SPRAY PERFUMES

van Ameringen-Haebler, Inc.,
 315-4th Ave., N.Y. See page 12.
 Budd Aromatic Chemical Co.,
 667 Washington St., N.Y. See page 22.
 Ph. Chaleyer, Inc., 200 Varick St., N.Y.
 See page 23.
 Compagnie Duval, 121 E. 24th St., N.Y.
 Compagnie Parento, Inc.,
 Croton-on-Hudson, N.Y.
 Dodge & Olcott Co., 180 Varick St., N.Y.
 P. R. Dreyer Inc., 12 E. 12th St., N.Y.
 See page 30.
 A. C. Drury & Co., 219 North East Water St.,
 Chicago See page 31.
 E. I. du Pont de Nemours & Co.,
 Wilmington, Del. See page 4.
 Evergreen Chemical Co., 160-5th Ave., N.Y.
 Felton Chemical Co., 599 Johnson Ave., Bklyn.
 Fritzsche Bros., Inc., 78 Beekman St., N.Y.
Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.
 See page 33.
 Heine & Co., 54 Cliff St., N.Y.
 Pierre Lemoine, Inc., 200 Varick St., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.
 See page 40.
 Magnus, Mabee & Reynard, 32 Cliff St., N.Y.

A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.
 Neumann-Buslee & Wolfe, 224 W. Huron St.,
 Chicago
 Pfaltz & Bauer, 300 Pearl St., N.Y.
 Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.
 Riviera Products Co., 215 W. Ohio St.,
 Chicago
 H. C. Ryland, Inc., 161 Water St., N.Y.
 C. A. Seguin Co., 500 N. Dearborn St., Chicago
 Wm. G. Sibbach & Co., 201 S. 2nd Ave.,
 Maywood, Ill.
 Synfleur Scientific Labs., Monticello, N.Y.
Ungerer & Co., 13 W. 20th St., N.Y.
 See page 61.
 United Laboratories, 8 E. 12th St., N.Y.
Van Dyk & Co., 57 Wilkinson Ave., Jersey City, N.J.
 See page 62.
 Albert Verley, Inc., 11 E. Austin Ave., Chicago

THEATRE SPRAYS

Chemical Compounding Corp., 262 Huron St.,
 Brooklyn
 Chemical Supply Co., 2450 Canal Rd., Cleveland
Clifton Chemical Co., 246 Front St., N.Y.
 See page 24.
 Eagle Soap Corp., 25 E. Jackson Blvd., Chicago
 Elkay Prods. Corp., 542 First Ave., N.Y.
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Goulard & Olena, 140 Liberty St., N.Y.
 Hockwald Chemical Co., 436 Bryant St.,
 San Francisco
 Jansen Soap & Chem. Co., 324 Leavenworth St.,
 San Francisco
 Kay Chemical Co., 329 Ringold St., Baltimore
 Marshall Prods., Inc., 806 N. 1st St., St. Louis
 Palmer Products, Inc., Waukesha, Wis.
 Peck's Prods. Co.,
 5224 N. 2nd St., St. Louis
 Theo. B. Robertson Prods. Co.,
 700 W. Division St., Chicago
 Sanico Chemical Corp., 611 Broadway, N.Y.
 Selig Co., 336 Marietta St., Atlanta, Ga.
 Shores Co., Cedar Rapids, Ia.
 U. S. Sanitary Specialties Corp.,
 435 S. Western Ave., Chicago
 World Spray Co., Inc., 5117 Central Ave.,
 Los Angeles

THERMOMETERS (see INSTRUMENTS)**THYME OIL (see ESSENTIAL OILS)****THYMOL (see AROMATIC CHEMICALS)****TIGHT WRAPPING MACHINERY (see WRAPPING MACHINERY)****TIN CRYSTALS**

J. T. Baker Chem. Co., Phillipsburg, N. J.
General Chemical Co., 40 Rector St., N.Y.
 See page 32.
 Grasselli Chemical Co., 1300 Guardian Bldg.,
 Cleveland
 Metal & Thermit Corp., 120 Broadway, N.Y.

TOILET GOODS (see TOILET PREPARATIONS)

TOILET GOODS COLORS

(see also *Perfuming Compounds*)

American Aniline Prods., Inc.,
45 E. 17th St., N.Y.
Dyestuffs & Chemicals, Inc.,
11th & Monroe Sts., St. Louis
Fezandie & Sperrle, 205 Fulton St., N.Y.
Geigy Co., 89 Barclay St., N.Y.
General Dyestuffs Corp., 230—5th Ave., N.Y.
Interstate Color Co., Inc., 5 Beekman St., N.Y.
H. Kohnstamm & Co., 91 Park Place, N.Y.
Leeben Chemical Co.,
389 Washington St., N.Y.
National Aniline & Chemical Co.,
40 Rector St., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y.
See page 52.

Sandoz Chemical Works,
61 Van Dam St., N.Y.

Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

See inside back cover.

TOILET PAPER

Brown Co., Portland, Me.
Scott Paper Co., Chester, Pa.
Straubel Paper Co., Green Bay, Wis.
U. S. Envelope Co., Lititz, Pa.

TOILET PREPARATIONS

(see also *Bath Salts, Shampoos, etc.*)

Cincinnati Soap Co.,
7th & Elm Sts., Cincinnati
Commercial Labs., Newark, N.Y. State
Holman Soap Co., 3100 Fox St., Chicago, Ill.
Lightfoot Schultz Co., 1412 Park Ave.,
Hoboken, N. J.
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago
Shores Co., Cedar Rapids, Ia.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOILET SOAP BASE

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.

Cincinnati Soap Co.,
7th & Elm Sts., Cincinnati
Colgate-Palmolive-Peet Co., Chicago
Hewitt Soap Co., Dayton, O.
Holbrook Mfg. Co., 18th St., Jersey City, N. J.
Los Angeles Soap Co., Los Angeles, Cal.
Marshall Prods., Inc., 806 N. 1st St., St. Louis
Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
J. T. Robertson Co., Syracuse, N.Y.
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago
Swift & Co., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOILET SOAP MILLS (see MILLS, TOILET SOAP)

TOILET SOAPS (Cakes)

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 14.

Cincinnati Soap Co., Cincinnati
Colgate-Palmolive-Peet Co., Chicago
J. Eavenson & Sons, Del. & Penn Sts.,
Camden, N. J.
Hewitt Soap Co., Dayton, O.
Holman Soap Co., 3100 Fox St., Chicago, Ill.
Larkin Co., Buffalo, N.Y.
Lightfoot Schultz Co., 1412 Park Ave.,
Hoboken, N. J.
Los Angeles Soap Co., Los Angeles, Cal.
Geo. E. Marsh Co., Lynn, Mass.
National Soap Co., Box 1613, Tacoma, Wash.
Newell, Gutradt Co., 350 Fremont St.,
San Francisco
North Coast Soap & Chem. Wks.,
Seattle, Wash.
J. T. Robertson Co., 147 Richmond Ave.,
Syracuse, N.Y.
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago
John T. Stanley Co., 640 W. 30th St., N.Y.
Swift & Co., Chicago
Vliet Soap Co., 638 Monroe St., Brooklyn
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago
Chas. W. Young & Co., Philadelphia

TOOTH PASTE

Commercial Laboratories, Newark, N. Y. State
McKesson & Robbins, 79 Cliff St., N.Y.
Geo. A. Schmidt Co., 236 W. North Ave.,
Chicago
Shores Co., Cedar Rapids, Ia.
Strong Cobb & Co., Cleveland
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TRIETHANOLAMINE (see ETHANOLAMINE)

TRIPOLI

Allied Industrial Prods. Co.,
17 N. Elizabeth St., Chicago
Barnsdall Tripoli Co., Seneca, Mo.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
Goris & Arnstein, 3700 Racine Ave., Chicago
K. F. Griffiths, 110 E. 42nd St., N.Y.
Hammill & Gillespie, 225 Broadway, N.Y.
Independent Gravel Co., Joplin, Mo.
International Silica Co., Cairo, Ill.
Tammis Silica Co., 228 N. La Salle St., Chicago
Whittaker, Clark & Daniels, Inc.,
245 Front St., N.Y.
Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

TRISODIUM PHOSPHATE
(see also *Brokers and Dealers*)

American Cyanamid & Chemical Corp.,
535—5th Ave., N.Y. See page 11.
Bowker Chem. Co., 419 Lexington Ave., N.Y.
See page 20.
General Chemical Co., 40 Rector St., N.Y.
See page 32.

TRISODIUM PHOSPHATE, (Contd.)

Grasselli Chemical Co., 1300 Guardian Bldg.,
Cleveland See page 34.
Harshaw Chemical Co., 1945 E. 97th St.,
Cleveland
International Agricultural Corp.,
61 Broadway, N.Y.
Swann Chemical Co., 420 Lexington Ave., N.Y.
See page 60.
Victor Chemical Works,
141 W. Jackson Blvd., Chicago See page 63.
Warner Chemical Co., 405 Lexington Ave., N.Y.
See page 64.

TRUCKS (Portable)

American Car & Foundry Co.,
30 Church St., N.Y.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Fairbanks, Morse & Co., 900 S. Wabash St.,
Chicago
Houchin Mach. Co., Hawthorne, N.J.
Huber Mach. Co., 265-46th St., Brooklyn
G. B. Lewis Co., Watertown, Wis.
Schwenk Safety Device Corp.,
27 Water St., N.Y.
C. T. Small Mfg. Co., 1204 Ferguson Ave.,
St. Louis

**TUBE FILLING MACHINERY (see
FILLING MACHINERY, TUBES)****TUBES (Collapsible)**

Aluminum Company of America,
2400 Oliver Bldg., Pittsburgh, Pa.
Art Tube Co., Irvington, N.J.
Bond Manufacturing Co., Wilmington, Del.
Consolidated Fruit Tar Co.,
New Brunswick, N.J.
Continental Can Co., 100 E. 42nd St., N.Y.
See page 27.
Globe Collapsible Tube Corp.,
28 Columbia Heights, Bklyn., N.Y.
Hygienic Tube Co., 34 Ave. L., Newark, N.J.
National Collapsible Tub Co.,
Providence, R.I.
New England Collapsible Tube Co.,
New London, Conn.
Peerless Tube Co., Bloomfield, N.J.
Sun Tube Corp., Hillside, N.J.
Victor Metal Products Corp., Bklyn., N.Y.
White Metal Mfg. Co., 1012 Grand St.,
Hoboken, N.J.
A. H. Wirz, Inc., Chester, Pa.

TURPENTINE

American Turpentine & Tar Co.,
New Orleans, La.
Antwerp Naval Stores Co., Savannah, Ga.
General Naval Stores Co.,
75 E. 45th St., N.Y.
Guignon & Green, 17 Battery Pl., N.Y.
Hercules Powder Co., Wilmington, Del.
National Turpentine Pwds. Co.,
Gull Point, Fla.
Taylor, Lowenstein & Co., Mobile, Ala.
G. A. Wharry & Co., 15 Moore St., N.Y.

**URINAL BLOCKS (see DEODORIZING
BLOCKS)**

USED MACHINERY & EQUIPMENT
Consolidated Products Co., 15 Park Row, N.Y.
See page 26.
First Machinery Co., 405 E. 15th St., N.Y.
Houchin Machinery Co., Hawthorne, N.J.
J. M. Lehmann Co., 250 West Broadway, N.Y.
See page 39.
Machinery & Equipment Co.,
225 Sherman Ave., Newark, N.J.
Newmann Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago See page 45.
Stein-Brill Corp., 183 Varick St., N.Y. (Used)

VACUUM CLEANERS (Heavy Duty)

Breuer Electric Mfg. Co., 852 Blackhawk St.,
Chicago See page 21.

VACUUM PUMPS (see PUMPS)**VALVES**

Alloy Prods. Corp., 221 Madison St.,
Waukesha, Wisc.
American Car & Foundry Co.,
30 Church St., N.Y.

VANILLIN

(see also Essential Oils)

Fries Bros., 90 Reade St., N.Y.
Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.
See page 33.
Maywood Chemical Co., Maywood, N.J.
Monsanto Chemical Works, 1724 S. 2nd St.,
St. Louis, Mo.
Verona Chemical Co., Verona Ave.,
Newark, N.J.

VAPORIZERS (see SPRAYERS, STEAM)**VATS (see TANKS)****VENDING MACHINES**

Acme Cotton Products Co., 245-5th Ave., N.Y.
(Sanitary Napkin)
Brown Co., Portland, Me. (Soap and Paper
Towel)
Hospital Specialty Co., 41 Union Sq., N.Y.
(Sanitary Napkin)
Rochester Germicide Co., Rochester (Sanitary
Napkin)

VETIVERT OIL (see ESSENTIAL OILS)**VOLCANIC ASH**

Allied Industrial Prods. Co.,
17 N. Elizabeth St., Chicago
Goris & Arnstein, 37th & Racine Ave., Chicago
K. F. Griffiths, 110 E. 42nd St., N.Y.

VOLCANIC ASH, (Contd.)

Hammill & Gillespie, 225 Broadway, N.Y.
 Jas. H. Rhodes & Co., 157 W. Austin Ave.,
 Chicago
 Tamm's Silica Co., 228 N. LaSalle St., Chicago
 Whitaker, Clark & Daniels, 245 Front St., N.Y.

WATER STILL (Automatic)

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used) See page 45.
 F. J. Stokes Machine Co., Phila., Pa.

WASHING MACHINERY (Bottles)

Barry-Wehmiller Machinery Co.,
 4660 W. Florissant Ave., St. Louis
 Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Karl Kiefer Machine Co., Cincinnati, O.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.
 F. J. Stokes Mach. Co., Philadelphia, Pa.
 U. S. Bottlers Machinery Co.,
 4025 N. Rockwell St., Chicago

WAX APPLICATORS

American Standard Mfg. Co.,
 2509 Lime St., Chicago
 Palmer Products, Inc., Waukesha, Wis.

WAX, FLOOR, (see FLOOR WAX)**WAX POLISHES, (see POLISH, WAX)****WAXES (do not confuse with floor wax)**

Wm. Benkert & Co., 100 Gold St., N.Y.
 See page 19.
 E. A. Bromund Co., 256 Broadway, N.Y.
 T. G. Cooper & Co., 47 N. 2nd St., Phila.
 William H. Dey & Co., 11 Water St., N.Y.
 A. C. Drury & Co., 219 North East Water St.,
 Chicago See page 31.
 General Dyestuff Corp., 230—5th Ave., N.Y.
 J. L. Hopkins & Co., 220 Broadway, N.Y.
 Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Stanley Jordan & Co., 11 Water St., N.Y.
 W. & A. Leaman, 17 State St., N.Y.
 George H. Lincks, 123 Front St., N.Y.
 Muensch-Kreuzer Candle Co., Syracuse, N.Y.
 Neumann-Buslee & Wolfe, 224 W. Huron St.,
 Chicago
 S. B. Penick & Co., 132 Nassau St., N.Y.
 See page 47.
 R. F. Revson Co., 91—7th Ave., N.Y.
 Frank B. Ross Co., 79 Wall St., N.Y.
 E. M. Sergeant Co., 350—5th Ave., N.Y.
 Sherwood Petroleum Co., Brooklyn, N.Y.
 Strohmeyer & Arpe, 139 Franklin St., N.Y.
 Smith-Weihman Co., 15 Moore St., N.Y.
 See page 54.
 Will & Baumer Candle Co., Syracuse, N.Y.

WEIGHING EQUIPMENT (Automatic)

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 J. L. Ferguson Co., Joliet, Ill.
 B. F. Gump Co., 431 S. Clinton St., Chicago
 S. Howes Co., Silver Creek, N.Y.
 Johnson Automatic Sealer Co., Ltd.,
 Battle Creek, Mich.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.
 Pneumatic Scale Corp., Norfolk Downs, Mass.
 See page 48.
 F. J. Stokes Machine Co., Phila., Pa.
 Stokes & Smith Co., Summerdale, Phila.
 See page 59.
 Triangle Package Machinery Co.,
 910 Spaulding Ave., Chicago
 Volumeter Co., 710 Ohio St., Buffalo, N.Y.

WASHING POWDERS

American Soap Powder Wks.,
 100 Van Dyke St., Brooklyn, N.Y.
 Armour Soap Wks., 1355 W. 31st St., Chicago
 See page 14.
 Columbia Soap & Chem. Co., Inc.,
 217 Clara St., San Francisco
 Du Bois Soap Co., Cincinnati, O.
 Fuld Bros., 2308 Frederick Ave., Baltimore
 Hewitt Soap Co., Dayton, O.
 Holman Soap Co., 3100 Fox St., Chicago, Ill.
 H. Kohnstamm & Co., 91 Park Place, N.Y.
 Los Angeles Soap Co., Los Angeles, Calif.
 Geo. E. Marsh Co., Lynn, Mass.
 National Milling & Chem. Co.,
 Managunk, Philadelphia, Pa.
 North Coast Soap & Chem. Wks.,
 Seattle, Wash.
 Paper Makers Chemical Corp.,
 Kalamazoo, Mich.
 Peck's Prods. Co., 5224 N. 2nd St., St. Louis
 Poland Soap Works, Anniston, Ala.
 Procter & Gamble Co., Cincinnati
 Stevens Soap Corp., 200 Sullivan St., Brooklyn
 Victor Chemical Works, 141 W. Jackson Blvd.,
 Chicago See page 63.

WATER SOFTENERS

Jansen Soap & Chem. Co., 324 Leavenworth St.,
 San Francisco
 Permutit Co., 330 W. 42nd St., N.Y.
 Wecoline Prods. Co., 15 E. 26th St., N.Y.

WHALE OIL*(see also Brokers and Dealers)*

Harvey & Outerbridge, 250 Park Ave., N.Y.
 F. A. Marsily & Co., 25 Beaver St., N.Y.
 Murray Oil Prods Co., 21 West St., N.Y.
 Wilbur-Ellis & Redding, 17 Battery Pl., N.Y.
 See page 65.

WHALE OIL SOAPS*(see also Fish Oil Soaps)*

Marshall Prods., Inc., 806 N. 1st St., St. Louis
 National Oil Products Co., Harrison, N. J.
 National Soap Co., Box 1613, Tacoma, Wash.
 Newell, Gutradt Co., 350 Fremont St.,
 San Francisco
 North Coast Chemical & Soap Works,
 Seattle, Wash.
 Procter & Gamble Co., Cincinnati
 Silmo Chemical Co., Vineland, N.J.
 Werner G. Smith Co., 2191 W. 110th St.,
 Cleveland

WHITE MINERAL OILS

A. C. Drury & Co., 219 North East Water St.,
 Chicago See page 31.
 S. Schwabacher & Co., 59 Pearl St., N.Y.
 L. Sonneborn Sons, 88 Lexington Ave., N.Y.
 See page 58.
 Stanco, Inc., 2 Park Ave., N.Y.
 Sherwood Petrol. Co., Brooklyn, N.Y.

WHITING

Chas. B. Chrystal Co., 11 Park Pl., N.Y.
 Columbia Alkali Co., 350—5th Ave., N.Y.
 See page 25
 Stanley Doggett, Inc., 75 Varick St., N.Y.
 Goris & Arnstein, 37th & Racine Ave., Chicago
 Grasselli Chem. Co., 1300 Guardian Bldg.,
 Cleveland See page 34.
 W. S. Gray Co., 342 Madison Ave., N.Y.
 Hammill & Gillespie, 225 Broadway, N.Y.
 Industrial Chem. Sales Co., Inc.,
 230 Park Ave., N.Y.
 Innis, Speiden & Co., 117 Liberty St., N.Y.
 See page 36.
 Pittsburgh Plate Glass Co., Milwaukee, Wis.
 Reliance Whiting Co., Alton, Ill.
 George A. Rowley Co., 119 N. Broad St., Phila.
 E. M. Sergeant Co., 350—5th Ave., N.Y.
 Geo. B. Smith Chem. Works, Springfield, Ill.
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

WOOL GREASE

Bopf-Whittam Corp., Westfield, N. J.
 Durkee Famous Foods, Inc., 2670 Elston Ave.,
 Chicago
 Hummel Chemical Co., 90 West St., N.Y.
 W. L. Jacobs, Sperry Bldg., Brooklyn, N.Y.
 Jungmann & Co., 157 Chambers St., N.Y.
 W. L. Montgomery & Co., 89 Beach St., Boston
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.
 Rayner & Stonington, 79 Wall St., N.Y.

See inside back cover.

WRAPPING MACHINERY (Cake Soaps)

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 J. M. Lehmann Co., 250 West Broadway, N.Y.
 See page 39.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)

See page 45.
 Package Machinery Co., 132 Bernie Ave.,
 Springfield, Mass.
 F. B. Redington Co., 112 S. Sangamon St.,
 Chicago

WRAPPING MACHINERY (Tight Wrapping)

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.
 Pneumatic Scale Corp., Norfolk Downs, Mass.
 See page 48.
 Stokes & Smith Co., Summerdale, Phila.
 See page 59.

WRAPPING MACHINERY (Wax)

Consolidated Prods. Co., 15 Park Row, N.Y.
 (Used) See page 26.
 J. L. Ferguson Co., Joliet, Ill.
 Johnson Automatic Sealer Co., Ltd.,
 Battle Creek, Mich.
 J. M. Lehman Co., 250 West Broadway, N.Y.
 See page 39.
 Newman Tallow & Soap Machy. Co.,
 1051 W. 35th St., Chicago (Used)
 See page 45.
 Package Machinery Co., 132 Bernie Ave.,
 Springfield, Mass.
 Pneumatic Scale Corp., Norfolk Downs, Mass.
 Chicago See page 31.
 F. B. Redington Co., 112 S. Sangamon St.,
 Chicago

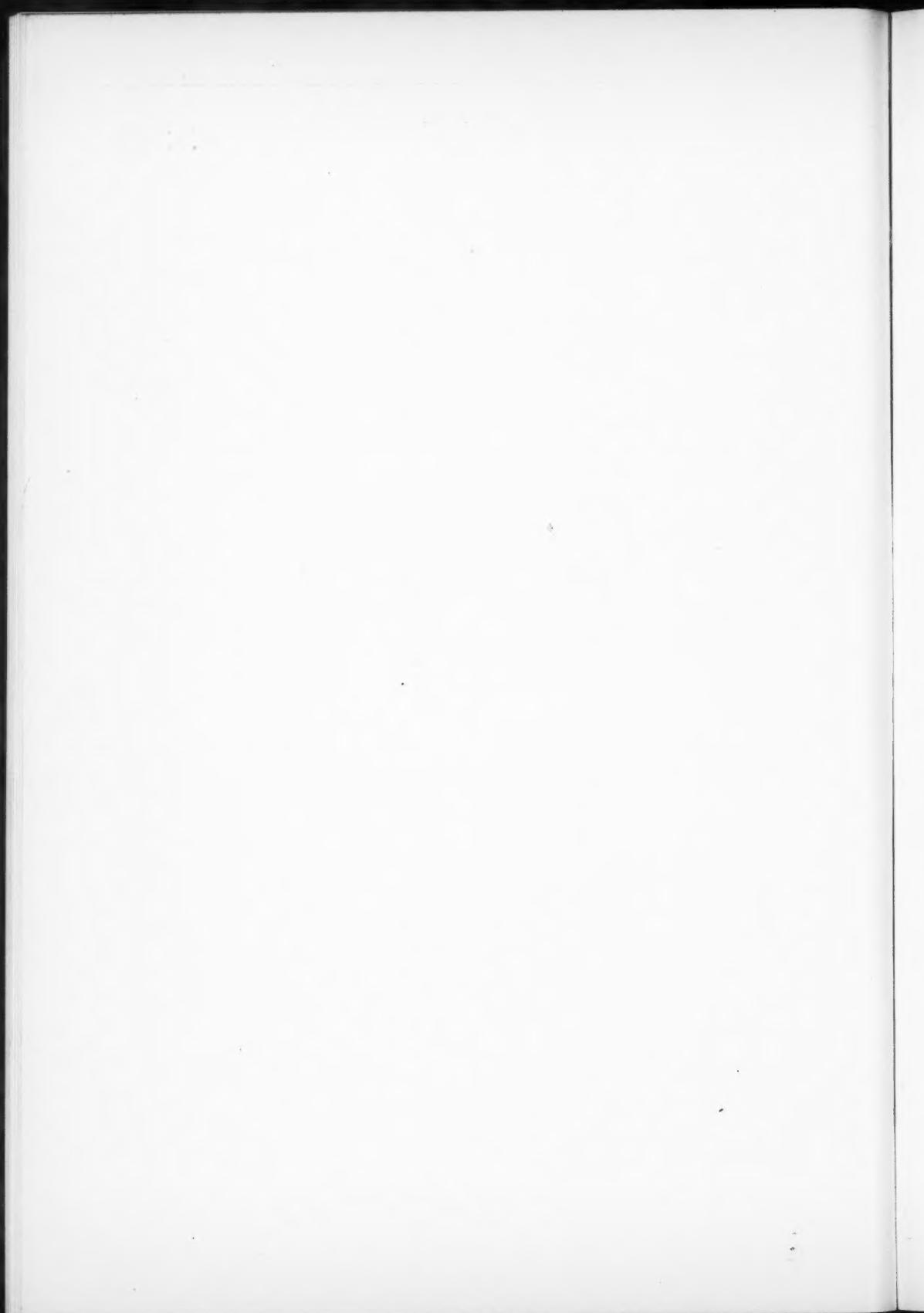
YLANG YLANG OIL (see ESSENTIAL OILS)**ZINC OXIDE**

Anaconda Sales Co., E. Chicago, Ind.
 J. T. Baker Chem. Co., Phillipsburg, N. J.
 Chas. B. Chrystal Co., 11 Park Pl., N.Y.
 A. C. Drury & Co., 219 North East Water St.,
 Chicago See page 31.
 Eagle-Picher Lead Co.,
 134 N. La Salle St., Chicago
 Grasselli Chem. Co., 1300 Guardian Bldg.,
 Cleveland See page 34.

Harshaw Chem. Co., Cleveland
 Innis, Speiden & Co., 117 Liberty St., N.Y. See page 36.
 Jungmann & Co., 157 Chambers St., N.Y.
 Mallinckrodt Chemical Works, St. Louis, Mo.
 Merck & Co., Rahway, N. J. See page 44.
 New Jersey Zinc Co., 160 Front St., N.Y.
 Western Zinc Oxide Co., Leadville, Col.

ZINC STEARATE (see STEARATES)

Memoranda



Appendix

BLUE BOOK and CATALOG
for the Soap, Insecticide, Disinfectant
and Allied Industries
for 1934

Code of Fair Competition for the Soap and Glycerine Manufacturing Industry	130
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Coloring Soap and Sanitary Products	136
Soap Perfuming	140
Testing Liquid Insecticides	152
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Code of Fair Competition for the Soap and Glycerine Manufacturing Industry

ARTICLE I—PURPOSES

To effectuate the policies of Title I of the National Industrial Recovery Act, the following provisions are submitted as a Code of Fair Competition for the Soap and Glycerine Manufacturing Industry, and upon approval by the President of the United States, shall be the standard of fair competition for this industry.

ARTICLE II—DEFINITIONS

1. The term "Soap and Glycerine Manufacturing Industry" as used herein includes the manufacturing in Continental United States of household, industrial, and toilet soaps and soap products, and glycerine which is a by-product of the saponification industries, together with such branches or subdivisions thereof as may from time to time, upon approval of the President of the United States or his authorized representative, be included under the provisions of this Code. This definition shall not, however, bar this Code and/or supplemental codes or agreements submitted by the Code Authority or other Agencies set up under this Code, from applying, when approved by the President or his authorized representative, to detergent, cleanser, or related industries; nor shall this definition bar the application of this Code and/or such supplemental codes or agreements from applying, when approved by the President or his authorized representative, in such territories outside of Continental United States as may be specifically covered in such approval.

2. The term "employee" as used herein includes any person engaged in any phase of the industry in any capacity in the nature of employee irrespective of the method of payment of his compensation. The term "employer" includes anyone by whom such an employee is so engaged.

3. The term "member of the industry" as used herein includes any employer who shall be subject to this Code. The term "member of the Code" includes any member of the industry who shall expressly signify assent to this Code.

4. The term "Association" as used herein means the Association of American Soap and Glycerine Producers, Inc., a membership corporation, not for profit, organized and existing under the laws of the State of Delaware. The

term "Board of Directors" means the Board of Directors of said Association.

5. The term "southern states" as used herein includes Virginia, North Carolina, South Carolina, Tennessee, Arkansas, Georgia, Alabama, Mississippi, Louisiana, Texas, and Florida.

6. The term "Act" as used herein means Title I of the National Industrial Recovery Act. The term "President" means the President of the United States.

7. The term "effective date" as used herein means the first Monday ten days or more after this Code shall have been approved by the President. The term "six months' period" means the 26 weeks' period beginning with the effective date, and each 26 weeks' period thereafter until the expiration of this Code or of the Act.

8. Population for the purposes of this Code shall be determined by reference to the 1930 Federal Census.

ARTICLE III—HOURS

A. No employee shall work or be permitted to work in excess of an average of 40 hours per week in any six months' period, except as follows:

1. Technical or professional employees such as chemists, lawyers, doctors, nurses, etc., engaged in their technical or professional capacity but not including skilled operating personnel; employees in a managerial, supervisory, or executive capacity who receive \$35 or more per week; supervisors or highly skilled workers in continuous processes where restriction of hours would unavoidably reduce production, and who receive \$35 or more per week; employees on emergency maintenance and repair work; watchmen; and outside salesmen.

2. Immediate assistants to employees in a managerial, supervisory, or executive capacity, which assistants receive less than \$35 per week, and supervisors or highly skilled workers in continuous processes where restrictions of hours would unavoidably reduce production and who receives less than \$35 per week, who shall not work or be permitted to work in excess of 48 hours per week.

3. Accounting, clerical, office, store, shipping, service, or inside sales employees, who shall not work or be permitted to work in excess of an average of 40 hours per week in any

six months' period or in excess of 48 hours in any calendar week.

4. Employees on automotive or horse-drawn passenger, express, delivery, or freight service, who shall not work or be permitted to work in excess of an average of 44 hours per week in any six months' period or in excess of 48 hours in any calendar week.

5. Engineers, firemen, water tenders, and oilers, who shall not work or be permitted to work in excess of 48 hours a week.

B. If any employee on an hourly rate of pay works in excess of 8 hours in any 24-hour period, or in excess of 40 hours in any calendar week, the wage paid for excess hours shall not be less than one and one third the regular hourly rate.

C. If any employee works for more than one employer, no such employer or employers shall knowingly permit such employee to work for a total number of hours in excess of the number of hours prescribed, and all employers in the industry shall exercise due diligence to carry out the purpose of this section.

ARTICLE IV—WAGES

A. No employee shall be paid less than 40 cents an hour, or in southern states less than 35 cents an hour, except as follows:

1. Learners or apprentices in operations other than the light tasks of wrapping, packaging and filling, and not exceeding 5 percent of the total number of employees in any establishment, during the first 60 days of apprenticeship in the industry shall be paid not less than 90 percent of the minimum rates above prescribed.

2. Employees engaged in the light tasks of wrapping, packaging and filling shall not be paid less than 32½ cents an hour, or in southern states less than 30 cents an hour. Such employees during the first 6 months of their employment shall be paid not less than 90 percent of the rate herein established, but in no case shall the number of these employees exceed 25 percent of the total number engaged in the light tasks of wrapping, packaging, and filling.

3. Employees of the classes mentioned in subsections 3 and 4 of paragraph A of Article III shall be paid not less than—

\$15 per week in any city of over 500,000 population, or in the immediate trade area of such city.

\$14 per week in any other part of the United States.

4. Messengers, junior clerks, or others doing a junior grade of office or clerical work shall be paid not less than \$12. per week, but the number of such employees shall not exceed 5 percent of the total number of office employees in any establishment.

B. Each employee on piece work shall be paid at a rate which will guarantee not less per hour than the hourly rate to which he is entitled under this Article.

C. Based upon changes in minimum pay necessitated by the foregoing paragraphs of this Article, each employer shall in each establishment make fair and equitable readjustment of all pay schedules.

D. There shall be no evasion of this Code by any member of the industry by reclassification of general types of occupations existing on June 15, 1933.

ARTICLE V—CHILD LABOR

No person under 16 years of age shall be employed in this industry.

ARTICLE VI—ADMINISTRATION

A. To further effectuate the policies of the Act, the Board of Directors of the Association is set up as a Code Authority for the Soap and Glycerine Manufacturing Industry to cooperate with the President or his authorized representative in the administration of this Code. The President or his authorized representative may designate not to exceed three additional members, without vote, on such Code Authority. The Method of electing the Board of Directors of the Association shall be fair and equitable and subject to the approval of the President or his authorized representative.

B. Any member of the industry is eligible for membership in the Code and in the Association, and there shall be no inequitable restrictions on such membership. Members of the Code shall be entitled to share the benefits of the activities of the Code Authority and shall bear their proportionate shares of the expenses of maintenance of the Code Authority and its activities.

C. Branches or subdivisions of the industry, including product divisions and/or geographical sections of the Association, may, when approved by the President or his authorized representative, establish their own Planning and Fair Practice Agencies which shall each be self-governing in respect to conditions or problems relating exclusively to said branches or subdivisions, providing that no action of any such Agency shall be inconsistent with the purposes and provisions of this Code or the Act; and provided further that no supplemental agreements, recommendations, or provisions shall be submitted to the President by the Code Authority or any Planning and Fair Practice Agency without first having been approved by duly recorded vote of the branches or subdivisions concerned. The method of voting in each branch or subdivision shall be fair and equitable and subject to the approval of the President or his

authorized representative. Members of each branch or subdivision shall bear their proportionate shares of the expenses of maintenance of such branch or subdivision. Application for the establishment of any Planning and Fair Practice Agency, and any recommendations or reports by such Agency when established, shall be transmitted promptly to the President or his authorized representative through the Code Authority.

D. The Code Authority and Planning and Fair Practice Agencies established under this Code shall have the following duties and powers to the extent permitted by the Act and subject to review by the President or his authorized representatives:

1. The Code Authority shall administer this Code and shall maintain all activities pertinent thereto, such as obtaining from employers, reports requested by the President or his authorized representative in respect to wages, hours of labor, conditions of employment, and other matters pertinent to the purposes of the Act. Members of the industry shall furnish such reports and information promptly, and reports shall be notarized when required. The Code Authority shall designate the agent or agents to whom reports shall be submitted, except that the Planning and Fair Practice Agencies established in accordance with this Code may designate the agent or agents to whom members of the branch or subdivision concerned shall submit their reports. The selection of agents and statistical methods used by them in collecting and compiling information shall be subject to review by the President or his authorized representative. Where reports are of a confidential nature they shall be confidential to the agent or agents designated and to any designated Government agencies, and the information so collected shall be disseminated without individual identification and only in combination with other information of the same type, and shall be notarized when required. The confidential nature of the information requested from members of the industry shall be determined by the Code Authority, subject to review by the President or his authorized representative, and all such rulings shall be general in application and shall not vary as between members of the same branch or subdivision of the industry. Any of the foregoing information shall be furnished by the Code Authority to such government agencies as the President or his authorized representative may designate to effectuate the purposes recited in Section 3 (a) of the Act. This article shall not relieve any members of the industry from continuing to make customary statistical reports to Government departments.

2. The Code Authority or Planning and Fair Practice Agencies established under this Code

shall study trade practices with a view to making recommendations to the President or his authorized representative.

3. The Code Authority or Planning and Fair Practice Agencies established under this Code, shall make studies in an effort to determine fair and uniform cost-finding procedures. If and when such cost-finding procedures are approved by the President or his authorized representative, then sales below cost as determined by such approved procedures shall be an unfair method of competition.

ARTICLE VII—COLLECTIVE BARGAINING

1. Employers shall comply with the following requirements of Section 7 (a) of the Act:

“Employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection; (2) no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing, and (3) employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment approved or prescribed by the President.”

ARTICLE VIII—GENERAL

1. In accordance with Section 10 (b) of the Act, this Code and all the provisions thereof are expressly made subject to the right of the President from time to time to cancel or modify any order, approval, license, rule, or regulation issued under Title I of said Act and specifically, but without limitation, to the right of the President to cancel or modify his approval of this Code or any conditions imposed by him upon his approval.

2. Within each state, members of the industry shall comply with any laws of such state imposing more stringent requirements regulating the age of employees, wages, hours of work, or health, fire, or general working conditions, than under this Code.

3. If any employer subject to this Code is also an employer in any other industry, the provisions of this Code shall apply to and affect only that portion of his business which is subject to this Code.

4. This Code shall cease to be effective upon the expiration of the Act or upon decision of the President, prior to such expiration, to cancel his approval of this Code.

Federal Specifications for Soap Products

Soap Powder (P-S-606)

Soap powder shall be a uniform mixture of soap and sodium carbonate in powdered form. It shall be readily soluble in tepid water, shall contain no free caustic alkali or inert filler, and shall be free from objectionable odor.

Anhydrous soap shall be not less than 15 per cent. Sodium carbonate (Na_2CO_3) shall be not less than 30 per cent. The aggregate of anhydrous soap and sodium carbonate shall be not less than 55 per cent.

Liquid Toilet Soap (P-S-618)

Liquid toilet soap shall be a clear solution of pure vegetable oil potash (or potash and soda) soap with or without glycerol or alcohol, suitably perfumed, and free from all foreign matter. It shall quickly form a satisfactory lather and have no injurious effect and leave no objectionable odor on the skin.

The material shall be a clear solution, free from objectionable odor, other than from coconut oil, and shall form a satisfactory lather. Total anhydrous soap shall be not less than the equivalent of 15 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali calculated as potassium hydroxide (KOH) shall not exceed 0.05 per cent. Chloride calculated as potassium chloride (KCl) shall not exceed 0.3 per cent. More than traces of sulphates and sugar shall not be present. All constituents shall be calculated on the basis of the original sample.

Chip Soap (P-S-566)

Chip soap shall be a soap in chip form made from soda and fats, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for high-grade laundry work with soft water, when the presence of alkaline salts is objectionable.

Matter volatile at 105° C. shall not exceed 15 percent. Deliveries which yield more than 15 per cent of volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride

shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter soluble in water shall not exceed 0.4 per cent. Titer of the mixed fatty acids prepared from the soap must be not less than 39° C. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 10 per cent of volatile matter.

Automobile Soap (P-S-561)

Automobile soap shall be a pure vegetable oil paste soap containing no free alkali or acid, shall be relatively free from matter insoluble in alcohol, shall be homogeneous, free from adulterants of any kind, and without objectionable odor.

Matter volatile at 105° C. shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of volatile matter will be rejected without further test. The sum of free alkali and total matter insoluble in alcohol shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.2 per cent. Free acid, calculated as oleic, shall not exceed 0.2 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Unsaponified matter shall not exceed 4 per cent. Rosin shall not be present. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 50 per cent of volatile matter.

Technical Trisodium Phosphate (O-T-671)

Technical trisodium phosphate shall be a white, uniform product in finely granulated form, and shall contain not less than 95 per cent of crystalline trisodium phosphate ($Na_3PO_4 \cdot 12H_2O$).

It shall be a white, uniform, finely granulated product. Total alkalinity to methyl orange indicator, calculated as Na_2O , shall be not less than 15.5 per cent or more than 20 per cent. Phosphoric anhydride (P_2O_5) shall be not less than 17.7 per cent. Matter insoluble in distilled water shall not exceed 0.1 per cent. No residue shall be retained on a No. 10 sieve (sieve opening = 0.0787 inch) and the residue retained on

* General and Detailed Requirements as specified in the Standard Stock Catalogue of the U. S. Federal Specifications Board.

a No. 100 sieve (sieve opening=0.0059 inch) shall be not less than 50 per cent.

Milled Toilet Soap (P-S-621)

Milled toilet soap shall be a high grade, milled cake soap, as free as possible from water, either colored or uncolored, and mildly perfumed unless otherwise specified, thoroughly saponified, well compressed in firm, smooth cakes of a size and shape specified in the contract. It should lather freely when used with cold, soft, water.

Matter volatile at 105° C. shall not exceed 15 per cent. Deliveries which yield more than 15 per cent of volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 1.5 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Unsaponified saponifiable matter shall not exceed 0.3 per cent. Rosin, sugar, and foreign matter shall not be present. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 15 per cent of matter volatile at 105° C.

White Floating Toilet Soap (P-S-616)

White, floating soap shall be a cake soap, at least as good in every respect as one made from soda and a mixture of high-grade tallow with 25 to 30 per cent of coconut oil, of good light color, without objectionable odor, thoroughly saponified, and so prepared as to float on water.

Matter volatile at 105° C. shall not exceed 34 per cent. Deliveries which yield more than 34 per cent volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.15 per cent. Chloride, calculated as sodium chloride (NaCl), shall not exceed 1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Rosin, sugar, and foreign matter shall not be present. The acid number of the mixed fatty acids prepared from the soap shall be not less than 212. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 28 per cent of volatile matter.

Ordinary Laundry Soap (P-S-591)

Ordinary laundry soap shall be a well-made, uniformly mixed laundry or common soap, made from soda and fats, with no excessive pro-

portion of rosin and a moderate amount of matter insoluble in alcohol; shall be free from makeweights, and shall be suitable for use with moderately hard water for general cleaning and laundry purposes.

Odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an air-tight, closed container for comparison with samples from deliveries.

Matter volatile at 105° C. shall not exceed 36 per cent. Deliveries which yield more than 36 per cent volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol and sodium chloride, shall be not less than 2 per cent nor more than 10 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 1 per cent. Rosin shall not exceed 25 per cent. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 34 per cent of volatile matter.

Hand Grit Soap (P-S-576)

Hand-grit soap shall be a cake soap containing about one-third its weight of clean, finely divided insoluble siliceous matter, as free as possible from water, uncolored, unscented unless otherwise specified, thoroughly saponified, and well compressed in firm, smooth cakes.

Matter volatile at 105° C. shall not exceed 25 per cent. Deliveries which yield more than 25 per cent of volatile matter will be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 25 nor more than 40 per cent. The insoluble siliceous material shall not yield more than 2 per cent of residue retained on a No. 100 sieve and not more than 10 per cent of residue retained on a No. 200 sieve. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of matter volatile at 105° C., insoluble siliceous material, and alkali as alkaline salts. The per-

centage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 25 per cent of matter volatile at 105° C.

Powdered Laundry Soap (P-S-596)

Powdered soap for laundry use shall be a soap in powdered form made from soda and fats, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for high-grade laundry work with soft water, when the presence of alkaline salts is objectionable.

Matter volatile at 105° C. shall not exceed 7 per cent. Deliveries which yield more than 7 per cent of matter volatile at 105° C. will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 0.4 per cent. Titer of the mixed fatty acids prepared from the soap shall be not less than 39° C. Residue retained on a No. 12 sieve shall not exceed 1.5 per cent. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 5 per cent of volatile matter.

Salt-Water Soap (P-S-611)

Salt-water soap shall be a soap well made from pure coconut oil, pure palm kernel oil, or a mixture thereof, and the necessary alkali. It shall be entirely soluble in both sea water and fresh water and shall make a suitable lather.

Matter volatile at 105° C. shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of volatile matter will be rejected without further test. Total matter insoluble in alcohol shall be not less than 2 per cent nor more than 3 per cent and shall consist, essentially, of sodium carbonate (Na_2CO_3). Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 0.5 per cent. Chloride, calculated as sodium chloride (NaCl), shall be not less than 2.5 per cent nor more than 3.5 per cent. Rosin, sugar, and foreign matter shall not be present. The acid number of the mixed fatty acids prepared from the soap shall be not less than 240. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 55 per cent of volatile matter.

Glycerin (O-G-491)

Grade A.—"U. S. P." glycerin shall conform to the requirements of the latest revision of the United States Pharmacopeia for glycerin.

Grade B.—"High-gravity" glycerin ("Dynamite glycerin").

Appearance.—Shall be clear and free from suspended matter.

Color.—Maximum limit shall not be greater than a combination of No. 80 yellow Lovibond glass and No. 20 red Lovibond glass on a 5 $\frac{1}{4}$ -inch column of the glycerin.

Odor.—Shall be slight and characteristic of the grade of glycerin specified. If desired, shall conform to the odor of a sample mutually agreed upon by buyer and seller.

Specific gravity.—Shall be not less than 1.2620 at 15.5/15.5° C.

Acidity or alkalinity.—When 50 ml. of the glycerin is mixed with 100 ml. of distilled, carbon dioxide-free water and about 0.5 ml. of phenolphthalein indicator, the solution shall not require more than 0.30 ml. of normal hydrochloric acid solution or more than 0.30 ml. of normal sodium hydroxide solution for neutralization.

Ash.—Shall not exceed 0.10 per cent.

Chlorides, calculated as chlorine.—Shall not exceed 0.01 per cent when determined volumetrically in an aqueous solution of the residue left in the determination of the ash content.

Grade C.—"Yellow-distilled" glycerin.

Appearance.—Shall be clear and free from suspended matter.

Color.—Maximum limit shall not be greater than a combination of No. 80 yellow Lovibond glass and No. 20 red Lovibond glass on a 5 $\frac{1}{4}$ -inch column of the glycerin.

Odor.—Shall not be disagreeable. If desired, shall conform to the odor of a sample mutually agreed upon by buyer and seller.

Specific gravity.—Shall be not less than 1.2550 at 15.5/15.5° C.

Acidity or alkalinity.—When 50 ml. of the glycerin is mixed with 100 ml. of distilled, carbon dioxide-free water and about 0.5 ml. of phenolphthalein indicator, the solution shall not require more than 0.30 ml. of normal hydrochloric acid solution or more than 0.30 ml. of normal sodium hydroxide solution for neutralization.

Ash.—Shall not exceed 0.02 per cent.

Chlorides, calculated as chlorine.—Shall not exceed 0.01 per cent when determined volumetrically in an aqueous solution of the residue left in the determination of the ash content.

Coloring Soap and Sanitary Products

By S. N. CUMMINGS

THE modern soap business is complex and entails many ramifications. The soap maker, today, is called upon to color not only soaps and shampoos, but also hand pastes, bath salts, bath liquids, polishes of all kinds, lotions, cold creams, lipsticks, rouges, floor oils, waxes, sweeping compounds and the like. It is my purpose in this article to consider all these angles and to present those colors, which I have found to be best suited for the various purposes.

When you wish to color anything, you must select the proper coloring agent. You must take into consideration the material to be colored, the manner of incorporation, the equipment, and the tests to be made, such as fastness to light, alkali, acid, etcetera.

For all practical purposes there are three kinds of coloring matter used in the industry. They are (1) vegetable colors, (2) mineral colors, (3) coal tar dyes.

Let us consider the vegetable colors first. The vegetable colors used most often are Chlorophyl, Bixin and Alkanet. Of these, Chlorophyl enjoys the greatest use. Chlorophyl is a green color and is extracted from the green leaves of plants such as stinging nettles or spinach. It comes in three types—water-soluble, alcohol-soluble, and oil-soluble. The commercial product in each case is a liquid or a paste. Of the three, the oil soluble Chlorophyl enjoys the greatest sale. It is used particularly for the coloring of olive oil soaps such as silk boil-off, and automobile soaps. It is also used in the coloring of cosmetic creams, paraffin oils and waxes. Contrary to general belief, Chlorophyl is not very fast. Liquid soap colored with Chlorophyl will not hold its color when packed in tin containers. The light fastness of Chlorophyl in certain solutions is poor. The coloring cost, when compared to a good aniline dye is excessive. Coal tar substitutes are available.

At this point I might include the color Carmine or Cochineal. Carmine is not a vegetable dye as many believe. It is made from the dried bodies of the female insect *Coccus Cacti*, an insect which lives on certain cactus plants in Mexico, Central America and South America. At one time Carmine was used extensively. Its use today as a red color is limited.

NOW let us turn to the mineral colors. The two most important are Ultramarine Blue and Vermilion. Ultramarine Blue is used in the manufacture of blue mottled laundry soap. Vermilion Red is used in the manufacture of a red mottled soap. Chrome Green has been used for the coloring of soap but it has been largely replaced by aniline dyes. Spanish Oxide or Iron Oxide is used in some cases for sweeping compounds.

WE NOW come to the third and most important group of colors for soap and allied products. This group is made up of the coal tar derivatives or so called aniline dyes. The aniline dyes of commerce are generally powders or crystals, and according to their solvents, may be divided into these three groups: (1) water-soluble, (2) spirit-soluble, (3) oil- and fat-soluble.

Not all of the aniline dyes are fast. For most soaps and sanitary products, it is essential to have a dye or color that is fast to alkali and light. For some products, alkali fastness is essential and light fastness may be disregarded. As a general rule, the water-soluble and oil-soluble colors have good fastness to both alkali and light. The spirit-soluble colors, with one or two exceptions, do not have good fastness to alkali and light.

As the manufacturers of soaps and sanitary products have occasion to use water-, alcohol-, or oil-soluble colors, it is advisable to consider the preparation of these colors for use.

Water-Soluble. Dissolve the color in hot water. Filter to insure that you have no particles of undissolved color. These cause spots and blotches. Use from two to three ounces of color to a gallon of water. It is not necessary to make fresh color solutions each time. It is important, however, to stir the color if you have not used it in some time. This is necessary as some colors have a tendency to settle out of solution on long standing. A little stirring puts them back into solution again. Do not use a tin or iron container for your color solution. A chemical reaction will be set up. This will decrease the coloring power or destroy it entirely.

Alcohol-Soluble. Dissolve from two to five ounces of color per gallon of alcohol, depending on the shade. Filter and use as required. These colors are also soluble in acetone and ethyl acetate.

Oil-Soluble. These are soluble in perfume oils, oleic and stearic acid as well as other fatty acids, vegetable and mineral waxes, vegetable and mineral oils, and molten paradichlorbenzene. They are also soluble in acetone, ethyl acetate and toluol. When colors are dissolved in oils, waxes or fatty acids, the solvents should be heated to insure full solution of the color. You will not get full money value or perfect solution if you dissolve the color in cold oils.

NOW let us consider the various products to be colored and dyes suited for this purpose.

Milled Soaps. The dyes recommended are:

Pink—Rhodamine B Extra
 Salmon Pink—Rhodamine 6G Extra
 Green—Cyanine Green
 Golden Yellow—Metanil
 Blue—Alizarine Blue
 Red—Cloth Red
 Amber—Bismarck Brown
 Lemon—Fluorescene
 Canary Yellow—Fast Light Yellow
 Heliotrope—Violamine
 Violet—Acid Violet

These colors are all water-soluble and, with the exception of the Rhodamine and the Bismarck Brown, will mix with one another to give any shade desired. They all have good fastness. For a two hundred pound batch of soap, you require one-sixteenth of an ounce of Rhodamine B Extra; one-half ounce of Fluorescene; one-half ounce of Violamine. All the other colors require one ounce per two hundred pounds of soap. Where very delicate shades are required, these proportions can be cut down one-third. The color, in liquid form, is best added in the amalgamator. If spots or blotches form, it is a sign that some of your color was undissolved. It is, therefore, advisable to make sure that you have a clear solution.

Cold, Half-Boiled, and Boiled Soaps.

Cold and half-boiled toilet soaps are generally colored with water soluble colors. The same colors as given for the milled soaps are used. In the case of some green or yellow soaps, an oil-soluble Alizarine Green may be used. In the case of the cold soaps, the water-soluble color is added in liquid form after saponification has started. Wherever possible, as in figged soaps, crutch in the color after saponification is com-

pleted. If you use an oil-soluble color, dissolve it in some of the hot oil before adding to the mass. Never add dry color to your oils, lye, or soap mass. You will have trouble. Some of the color will not dissolve and will cause spots and blotches.

Boiled Automobile and Silk Boil-Off Soaps are colored either with Chlorophyl or with a water- or an oil-soluble aniline dye. I recommend the replacement of the Chlorophyl with the aniline dye due to the excessive coloring cost of the Chlorophyl. The dye is added after saponification is completed and before the soap is settled. A pound colors 4500 pounds of soap.

Laundry Soap. Where it is desired to give a laundry soap a deeper tone or a more brownish cast, an oil-soluble amber is recommended, as it will not stain the clothing. For laundry powders which are already manufactured and which must be made darker in tone, or browner, a water-soluble dye can be used. You should not use more than one pound of color for 16,000 pounds of soap, otherwise the dye will stain the clothing.

Soap Bases and Liquid Soaps. Water-soluble colors are recommended. The same dyes as given for the milled toilet soaps are used. The most popular shades are opal (opalescent green). This is obtained with Fluorescene. The mint green is a combination of a Cyanine Green and Metanil Yellow. Some soap makers use Naphthol Green to get their leaf green shade. In a number of cases where liquid soap or soap bases have been colored with Naphthol Green, and have been packed in tin containers, however, the color has faded out. This is apparently due to the fact that the tin is attacked by the soap and the chemical action resulting affects the dye and causes it to either change in color or else fade out altogether.

The liquid soap colors most generally used are:

Pink—Rhodamine B
 Yellow—Metanil Yellow
 Blue—Alizarine Blue
 Amber—Bismarck Brown
 Opal—Fluorescene
 Strawberry—a mixture of Rhodamine B and Bismarck Brown.

One pound of color, with the exception of the Fluorescene, will color 1500 gallons of liquid soap. One pound of Fluorescene will color 3000 gallons of liquid soap.

Medicated Soaps. These are generally colored red. Either a water-soluble or an oil-soluble red is used. The water-soluble dye is a Rhodamine derivative. The oil dye is an Azo compound. The oil-soluble dye is soluble in the cresylic acid. A pound of dye colors 2500 pounds of soap. These two colors can be used in milled, cold, or semi-cold medicated soaps.

Bath Salts. There are two ways of coloring bath salts. One is to get the color and odor combined and use the proportions recommended by the manufacturer, generally a pound to one hundred to two hundred pounds of bath salts. For the small manufacturer this is the most practical and most convenient method. The other method is to use water- or alcohol-soluble colors and add the perfume afterwards. When you use water-soluble colors, make the solution as concentrated as possible. Color some of your salt very heavily and then mix this up with the rest of your salt. This will minimize the water used. Add the perfume and then tumble or mix. The colors recommended are the water colors given at the end of this article.

Emulsions. There are two kinds of emulsions, (1) oil in water emulsions (2) water in oil emulsions. The oil in water emulsions are best colored with water-soluble dyes. The water which is used in the emulsion is first colored. If the emulsion is to be colored after completion, the color is dissolved in as little water as possible and the concentrated dye solution is added to the emulsion and stirred vigorously. The same colors that are used for the milled soaps are recommended. To this group, however, you should add Nigrosine for the black. The proportions are anywhere from one pound to four hundred gallons, to one pound to twelve hundred gallons, depending upon the depth of shade desired.

Water in oil emulsions are best colored with oil-soluble colors. The colors are dissolved in the oils before emulsification. The colors recommended are:

- Yellow—Azo Oil Yellow
- Red—Azo Oil Red
- Black—Oil Black
- Orange—Azo Oil Orange
- Blue—Alizarine Oil Blue
- Violet—Alizarine Oil Violet
- Green—Oil Green

With the exception of the black, one pound colors 200 gallons. One pound of the black colors 50 gallons.

Wax Emulsions. Wax emulsions, wax polishes and wax pastes are colored with oil-soluble colors. The same colors as for the water in oil emulsions are recommended. In the case of

shoe polish pastes, both the water- and oil-soluble colors are used. The water-soluble color is dissolved in the water and the oil-soluble color is dissolved in the wax before emulsification takes place. In the case of the wax floor pastes, the color is added to the solvent for the wax.

Washing Powders. Dish washing and cleaning compounds made from TSP, modified soda, soda ash, or combinations of same are generally colored with water soluble Fluorescene. The proportion used is one pound of color to 1250 pounds of compound. The color of the dyed compound is peach. When dissolved in water, a greenish fluorescence is given. The use of this color in the cleaning compounds is covered by patents. For coloring washing compounds made from the above chemicals where a fluorescence is not desired, use any of the water colors given at the end of this article.

Mineral Oils. Brilliantines and mineral oils are colored with oil-soluble colors given at the end of this article. A pound of color generally colors 1600 gallons.

Deodorizing Blocks are colored in the same manner as bath salts. Buy combinations of colors and perfumes and use the proportions recommended; or use the oil-soluble colors mentioned at the end of the article. If the blocks are molded, dissolve the color in the molten paradichlorbenzene. If the blocks are pressed, dissolve the color in the perfume oils and spray.

Sweeping Compounds. Water- or oil-soluble red or green is used. The water-soluble green is Malachite Green. The water-soluble red is Croceine Scarlet. The best oil-soluble green is an Alizarine Oil Green, the red is an Azo Oil Red. Where the water-soluble colors are used, the color is dissolved in water and the sawdust is colored first. Then the oil and sand are added afterwards. If the oil-soluble colors are used, the oil is colored first and then mixed thoroughly with the sawdust and the sand is added afterwards. The whole mass is then thoroughly mixed.

Glycerine Anti-Freeze mixtures are colored with basic colors. The shades used are a scarlet which is a mixture of Safranine and Phosphine, a green which is a mixture of Malachite Green and Auramine, a blue which is Methylene Blue zinc free. The proportions are one pound to 1500 to 3000 gallons depending upon the depth of shade desired.

Washing and Bluing Powders or Tablets. These tablets may be soap, cleansing agent like TSP, and bluing. Three kinds of bluing may be

used. (1) Ultramarine Blue, (2) Soluble Prussian Blue, (3) Aniline Blue. The Aniline Blue is the best to use as it gives a more attractive finish. The Prussian Blue may cause rust spots when the laundered material is ironed. The proportion of the Aniline Blue is one pound to 2000 pounds of compound.

Silicate of Soda Compounds. Three coloring media are used. Two are dyes and one is an indicator. The indicator is Phenolphthalein. It gives a color from a pale pink to a deep wine color depending upon the amount of indicator added. The others are Fluorescene which gives a yellow with a greenish fluorescence, and Eosine which gives a red with a yellowish fluorescence. In both cases the water-soluble Fluorescene and Eosine should be used. The silicate will act as a solvent. Stir thoroughly to insure perfect solution.

Nail Polishes. Either Basic dyes soluble in acetone and ethyl acetate are used, or oil-soluble dyes. The basic dyes generally used are Rhodamine B (Pink) Safranine Y (Red). They are used alone or mixed with Auramine (Yellow) or Chrysoidine (Orange) to give all desired shades. The oil reds given below are used, or shaded with oil yellow.

Cosmetic Creams and Lotions. See Emulsions.

FOLLOWING is a recapitulation of the colors suggested for compact reference.

Water-Soluble Dyes. These can be used for coloring, milled, cold, semi-boiled soaps, liquid soaps and bases, shampoos, toilet waters, bath salts and emulsions.

Pink—Rhodamine B Extra

Salmon Pink—Rhodamine 6 G Extra
Green—Cyanine Green
Golden Yellow—Metanil
Blue—Alizarine Blue
Red—Cloth Red
Amber—Bismarck Brown
Lemon—Fluorescene
Canary Yellow—Fast Light Yellow
Heliotrope—Violamine
Violet—Acid Violet

Alcohol-Soluble Dyes. These can be used for coloring nail polishes, anti-freeze glycerin, denatured alcohol, and shellac.

Pink—Rhodamine B
Red—Safranine Y
Blue—Methylene Blue ZF
Violet—Methyl Violet
Green—Malachite Green
Yellow—Auramine
Black Nigrosine
Orange—Chrysoidine
Brown—Bismarck Brown

Oil-Soluble Dyes. They can be used for coloring emulsions, nail polishes, waxes, wax pastes, oleic and stearic acid, lacquers, acetone, toluol, cello-solve, creams, mineral oils, petro-latum, paradichlorbenzene and orthodichlorbenzene.

Red—Azo Oil Red
Yellow—Azo Oil Yellow
Orange—Azo Oil Orange
Black—Oil Black
Blue—Alizarine Oil Blue
Violet—Alizarine Oil Violet
Green—Oil Green
Brown }
Amber }—Mixtures of the above.

*For Complete List of Firms
Supplying Colors see Page 114.*

Soap Perfuming

By PHILIP CHALEYER

THE success of many French toilet soaps has been due to a great extent to the fact that they are exquisitely scented. Of course, the quality of the soap stock is of first importance, but while American soapmakers, due to improved manufacturing methods, have succeeded in obtaining soaps of the finest quality, they have not as a whole paid sufficient attention to the important factor in sales appeal,—the perfume. This has undoubtedly been a contributing factor in many a failure to obtain the proper volume of sales in the case of certain well advertised soaps. Leading manufacturers, it seems, will not hesitate to make large appropriations for advertising but will try to cut to the bone on the cost of the perfumes for their soaps. They forget that if attractive advertising makes the first sale and keeps their name in front of the buying public, it is an attractive odor that helps bring the repeat order. They must, first of all, please the women who buy most toilet articles and who are always influenced by pleasing odors.

The cost of the perfume oil is an important factor in the final cost of a cake of soap, especially in the popular ten cent cake. For this reason, purchasing agents generally have a tendency to buy as cheaply as possible without giving sufficient consideration to quality. They forget, that when given two oils of ylang ylang, for instance, at different prices, say \$3.00 and \$4.00, the \$4.00 product may give not only a finer odor, but have twice the perfuming value of the \$3.00 product. Many soapmakers consider essential oils and aromatic chemicals that are higher than \$4.00 or \$5.00 as being out of their reach. This should not be the case, as certain aromatic chemicals sold at higher prices are so strong that they are cheap when compared in odor strength with less expensive products, and should find a place in the perfuming of toilet soaps. These products in 10% solution are often equal or superior in strength to the strongest aromatic chemicals or essential oils of similar price and 100% strength. Soapmakers should test aromatic products in soap on strength, odor value, tenacity, stability, etc. and their choice be determined by these tests. In the case of white soaps, the product should be tested in the sunlight, to see if discoloration takes place by exposure. These test cakes

should be kept at least two months in observation. Very often two products tested individually will not give discoloration but on being mixed together, will discolor. It is, therefore, necessary to proceed by elimination and conduct a series of tests. Generally, products discoloring in soap belong to the amino, aldehyde, nitrate or phenolic group of chemicals. Discoloration may also come from impurities contained in any one product and sources of supply should be checked thoroughly as sometimes the same product coming from two different sources may give varied results.

One can see, from what has been said above, that certain aromatic or essential oils will be excellent in soaps and others will have to be rejected entirely or their use limited to certain types of soaps. The fact that certain of these products discolor in soap is one of the reasons why most French soaps are colored. Most American manufacturers prefer to make white soaps because the public has been educated by way of advertising to consider pure white soaps as the best, though it is not always true and considerably limits the field not only to odors but also to raw materials used in soapmaking.

PROCESSES of manufacturing must also be given due consideration when selecting a perfume for toilet soap, though the processes today are rather well standardized and most fine toilet soaps on the market are of the milled variety. Nevertheless, there is still a large quantity of floating soaps and cheaper toilet soaps sold in which the perfume has to be introduced directly into the crutcher. In this case, the cheaper essential oils or aromatic chemicals are generally used, such as artificial sassafras, cedarwood, cassia, thyme, citronella, terpineol, etc., and only seldom great care is taken really to perfume this type of soap, for the main object is to cover the fatty odor of the soap stock. Floating bath soaps of the ten cent size should be given an agreeable perfume, as this price today is sufficient to permit more attention to be given to this problem and will do a great deal toward increasing their sale. As the perfume has to be added in the crutcher while the soap is still hot, if the perfume is too volatile, a great part is lost. For this reason, perfumes for this type of soap should contain a large amount of resins,

balsams, crystalline and high boiling substances which will naturally hold better under these circumstances as they are not too sensitive to the action of heat and alkalies.

The secret of perfuming milled soaps and in fact, all kinds of soaps, lies in the use of soluble resins and balsams in large proportions. They give a good background of odor, something upon which to build. The crude resins do not give the same results, because they contain impurities which render them unsuitable for use in soap. They also contain dirt and sometimes gums and waxes which are insoluble in essential oils or alcohol and give strong coloration with alkaline solutions. Though some of them may give a slight coloration when used in white soaps, they are generally very stable and retain their odor for a long time. They also act as fixatives and help to retain in soaps the odor of more volatile products. Styrox, balsam peru and balsam tolu form a good background for all types of odor, but are particularly good fixatives for lily of the valley, lilac, chypre, rose and in general, all floral bouquets. Benzoin is very good for rose, and oriental bouquets; orris for violet; castoreum for oriental bouquets and in general, anywhere an animal fixative is required. With the exception of castoreum, soluble resins can be used in large amounts and form from 20 to 30% of the perfume in any soap formula.

Results obtained with soluble resins have sometimes been reported irregular. This comes from the irregularity in quality of some of the commercial products, which sometimes are "loaded" with residues from the manufacture of synthetics, such as residues of ionone, rosin or solvents in order to be offered at low prices. These products are very frequently reinforced with synthetic products or extracted by a process which fails to remove all the impurities contained in the gum. They may also pick up impurities through long storage in tins or drums. For our tests, we have used products that we have made in our own laboratories, and for this reason know the results are those obtainable with a pure product in normal conditions.

Some soluble resins discolor in white soap and can only be used in colored soaps. Benzoin, balsam peru, balsam tolu, castoreum, Spanish labdanum, myrrh, oak moss and opopanax come under this heading. In the case of benzoin, balsam peru and balsam tolu, discoloration may be attributed to traces of vanillin contained in these balsams. The colorless essences do not give discoloration and can be substituted in the case of white soap. They constitute excellent fixatives especially for floral bouquets.

Castoreum liquid absolute, when used pure, sometimes brings, after standing ten to fifteen weeks, a slight yellow tinge, but if used in small quantities, 2 to 4% of a formula, as is generally the case, we do not believe the discoloration to be sufficiently noticeable in white soap to prevent its use. Spanish labdanum and myrrh darken after standing, but are excellent in colored soap as they retain their odor and are good fixatives for other ingredients. The distilled essences practically do not discolor when used in small amounts.

Oak moss is made in several grades, some of which contain large amounts of chlorophyll, and outside of their own color, communicated to white soaps, turn gradually brownish or grayish because of the combined action of light and alkalies. Opopanax behaves in a similar manner to myrrh. Green ciste and French labdanum, outside of their own colors, do not become darker or change color. They are lasting and stable fixatives.

Olibanum did not discolor in the tests we conducted though some of our friends said they noticed at times, a slight discoloration. We say that if the gum is pure, properly cleaned and purified, it does not discolor. The distilled essences do not change color either.

Orris does not discolor and is very stable. Styrox North American does not discolor and communicates a pleasant, balsamic odor to the soap. Styrox Honduras has a much more powerful odor and gives similar results. Styrox Asiatic is coming into disregard as it is generally inferior in quality to the two other products mentioned above. It is, nevertheless, still in use on account of its low price. All the styrox products are very stable and do not discolor.

Special mention should be made of the distilled essences which can be used in white soaps to replace the soluble resins when they give discoloration or contain too much natural color. These products are many times stronger than the soluble resins and though more expensive, represent dollar for dollar, very excellent value.

TESTING odiferous products in soaps is a long and tedious process. Only a very few of the largest soap manufacturers have undertaken the series of tests it involves. Many concerns have been afraid of the expense and time it takes, though the value of such a work is obvious and would permit the correction of many soap perfume formulæ which are basically wrong. This would also permit the elimination from these formulæ of products which have no

soap perfume value as they are not alkali fast or are apt to discolor. These products may be advantageously replaced by more stable fixatives and bring great improvements and savings to soap manufacturers.

The data that we are presenting has been carefully checked by some of our perfumer friends. Results, sometimes, have been found different from our own and for this reason we think it necessary to bring to the attention of our readers, outside factors that may affect results.

In the case of aromatic chemicals, results obtained have in general, always been comparable because they are well standardized and of uniform quality. Nevertheless, as the competition is keen and the prices very low, some manufacturers frequently offer for sale, products which are insufficiently purified and sometimes adulterated, which will naturally affect results. For instance, benzyl acetate, not free from chlorine, will form yellow spots in white soaps. Esters and phenols stored in drums or tins will frequently pick up traces of iron which will produce brownish or yellowish spots.

Artificial musks, principally xylene and ambrette, have been frequently incriminated by soap manufacturers as spotting white soaps. In the case of xylene musk, this is due to an impurity, namely trinitroxylool, which is very often found in this product when not properly purified. A good way to ascertain if the musk contains trinitroxylool is to dissolve a few crystals of musk in alcohol, then add a few drops of caustic soda in 10% solution. If the musk contains trinitroxylool, a strong blue color is immediately produced, which turns brown. If there is no trinitroxylool, the solution remains colorless and the musk will not discolor white soaps.

This same test, with a dilute solution of caustic soda, can be carried out with other products and other musks. The appearance of a coloration will be a fair indication that the product tested will discolor white soaps as soaps are always slightly alkaline and react about the same way as a dilute solution of caustic soda.

In the case of essential oils, we have always endeavored to obtain samples of oils of the greatest purity. This is not always the case in practice, as commercial grades are rather irregular in quality. Moreover, essential oils also vary in quality according to climatic conditions, country of origin, methods and processes used for their distillation. They may also pick up during storage, impurities that may cause discoloration. This has been particularly the case with oil of lavender, which has been held responsible for discoloring white soaps. Oil of lavender in ageing, develops acidity which at-

tacks drums or cans where the oils is stored and these traces of metal produce discolorations. This may also happen when iron kettles or milling machines are not kept in prime condition.

Terpenes, or essential oils, containing large amounts of terpenes, will almost always cause trouble in soaps as terpenes oxidize easily, particularly when traces of alkali and water are present as is the case in soap and when they are in an extreme state of dispersion as is also the case. They help to produce rancidity and turn the perfume into a bad odor. For these reasons, they should be absolutely avoided.

Soaps containing an excess of alkali will naturally turn perfume into bad odors very quickly.

THE quantity of perfume used in our experiments was 1% of the quantity of soap stock used. In the case of crystalline or very viscous substances, we put them into solution with diethyl phthalate, four times their weight, in order to obtain a better diffusion of the product in the soap, the percentage of odoriferous product remaining the same. The perfume was introduced in the soap in the regular way and milled twice through a small laboratory milling machine. The soap used in our experiments was regular white toilet soap stock and did not contain more than 0.02 free alkali. Two cakes of soap were set aside; one wrapped in glassine paper, the other left unwrapped. Both were examined every week and for comparison, an unscented cake of the same soap was used as a standard.

We are presenting this data in alphabetical order and in five different groups; we have also adopted the tabular form which makes it easier to use as a reference.

- 1st Group: Essential Oils
- 2nd Group: Aromatic Chemicals
- 3rd Group: Soluble Resins
- 4th Group: Distilled Essences from Resins
- 5th Group: List of products which are soap fast and the best to use either in white or colored soaps.

This last group constitutes a convenient reference for use when one starts making a new soap perfume. For detailed information about any particular product, one can refer to the tables. The products listed in this group have a lasting coefficient of at least 30 in wrapped soaps and can be considered soap fast.

We have experimented with certain essential oils such as angelica seed, wormwood, etc., which are seldom used by soap perfumers, but deserve better recognition because of their great strength and stability in soaps. Their characters, though sometimes unusual, lend them-

selves to very excellent blends, and in their use, the ability and ingenuity of the perfumer may be exercised and conducive to very interesting results.

A few words of explanation are, we believe, necessary to understand the meaning of the different columns of the tables on the following pages.

First Column—Discoloration: It is extremely important to know in advance when the product is to be used in a white soap. Discoloration, due to accidental causes, has naturally not been taken into account.

Second Column — Change in Character of Odor: Certain products after standing a certain length of time in soaps, change their character of odor, through the combined action of alkalies and humidity always present in soap. For instance, terpenes take a turpentine-like odor, clove becomes sweet and loses its spicy character, which often brings a complete change in the final odor. We have thought it interesting to note this fact in column 2.

Third and Fourth Columns—Lasting Index for Wrapped and Unwrapped Soaps: These indexes represent the number of weeks at the end of which time the odor of the product tested has disappeared or is very slightly noticeable in soap. It offers a very excellent point of comparison for lasting qualities among the dif-

ferent products tested. The maximum is 50 as we have limited our period of observation to 50 weeks.

Fifth Column—Good as Anti-Oxidant: Certain aromatic chemicals or essential oils act as anti-oxidant in soaps and prevent, to a certain extent their turning rancid. Other products, especially terpenes or essential oils containing large amounts of terpenes, have the reverse action. The products which act as anti-oxidants may be found in this column.

Sixth Column—Intensity of Odor: In this column are described the intensity and character of odor of products tested: strong, medium, sweet, weak, odorless.

Seventh Column—Good for all Soaps: This column notes the products that are sufficiently stable to be used in all soaps because they do not discolor. It does not mean that they are necessarily very lasting, but are stable as far as character of odor and discoloration are concerned.

Eighth Column — Good for Colored Soaps Only: In this column we have listed products which are stable but cause discoloration in soaps and for this reason can only be used in colored soaps.

Useful information has been gathered for the column marked "Observations" in order to obtain the best results in the blending of the products under consideration.

Essential Oils

(Group I)

Name of Product	Discoloration	Change in character of odor	Lasting index wrapped	Lasting index unwrapped	Good as anti-oxidant	Intensity of odor	Good for white soaps	Good for colored soaps	Observations
Almond Bitter Genuine	No	fades	10	5	—	strong	Yes	Yes	More lasting and better character than Benzaldehyde should be associated with Styrox soluble resin.
Angelica seed or roots	No	very stable	50	30	—	medium	Yes	Yes	Aromatic type of odor too expensive to be used in soaps, but very stable.
Anise Oil	No	very stable	35	10	—	sweet	Yes	Yes	Sometimes used to give a sweet character to bouquet odors.
Basil	No	stable	30	10	—	aromatic sweet	Yes	Yes	Nice aromatic odor.
Bay	very light	fairly stable	40	10	—	spicy strong	Yes	Yes	Use mostly for Shaving Cream odors.
Bergamot	No	stable	50	4	—	sweet mild	Yes	Yes	Very useful and very much used in bouquets of all kinds.
Birch Sweet	No	stable	30	10	—	aromatic sweet	Yes	Yes	Somewhat resembling Wintergreen. Behaves the same way when not adulterated.

Name of Product	Discoloration	Change in character of odor	Lasting index wrapped	Lasting index unwrapped	Good as anti-oxidant	Intensity of odor	Good for white soaps	Good for colored soaps	Observations
Bois de Rose	No	very stable	50	10	—	sweet fresh	Yes	Yes	Recommended in all types of soaps.
Cade	No—but dark colored	None	50	50	—	strong	No	Yes	Used in medicated soaps as skin anti-septic, has strong natural coloration.
Calamus	No	stable	50	30	—	medium	Yes	Yes	Give light woody effects for chypre.
Camphor (white) sassafrassy	No	fading	10	2	—	strong	Yes	Yes	Used only in cheap mechanic's soaps but not lasting.
Cananga	No	stable	30	15	—	sweet	Yes	Yes	Not recommended, much used in preference to Ylang-Ylang.
Caraway	No	stable	50	25	—	sweet	Yes	Yes	Should be used more often, blends well with Lavender for Chypre or Fougere type of odors.
Cassia	Yes Slightly	Change slightly	25	10	—	spicy strong	No	Yes	Very useful for spicy bouquets.
Cedarwood	No	fading	50	3	—	weak	Yes	Yes	Not much odor value but good fixative odor weak but persistent. Use for Violet, Lavender, etc.
Cinnamon leaf	Turns brown	fading change	20	4	—	spicy	No	Yes	Good for colored soap only but even for this purpose not very recommended as odor turns rapidly sweetish.
Citronella Java Ceylon	No	fading	50	10	—	strong	Yes	Yes	Sometimes, and especially when exposed to air, odor turns acid and resinous on account of the polymerization of Citronella.
Cloves	Turns brown	fading changing	20	4	—	strong	No	No	We do not recommend the use of this product in soap, rather use Cinnamon or other products spicy in character.
Coriander	No	fading	30	10	—	sweet	Yes	Yes	Very agreeable odor which can be fixed by the use of soluble resins.
Cumin	No	None	25	5	—	strong	Yes	Yes	Gives a refreshing odor when properly used as uplifter of odors.
Cypress	No	Turns turpentine	10	2	—	medium	No	No	Not recommended on account of change of odor.
Eucalyptus	No	None	50	10	—	aromatic medium	Yes	Yes	Good, blends especially well with Lavender. Use soluble resin benzoin and Myrrh with it.
Galbanum distilled essence	No	fade slowly	50	20	—	aromatic strong	Yes	Yes	Too expensive to use in most soaps, but in small quantity gives interesting tones.
Geranium Bourbon	No	None	50	20	—	rosy strong	Yes	Yes	Excellent for all kinds of soaps.
Geranium African	No	None	50	20	—	rosy strong	Yes	Yes	Slightly different in odor than the Bourbon, gives a lighter odor.
Geranium Turkish Palma Rosa	No	None	50	30	—	rosy strong	Yes	Yes	Has a grassy odor but a sweet agreeable character.
Gingergrass	No	None	50	20	—	medium	Yes	Yes	Has a more pronounced grassy character, must be used sparingly.
Guiac Wood	No	None	50	50	—	very weak	Yes	Yes	Good as a fixative especially in Rose type of odors.
Lavender	No	fading gradual	50	15	—	medium	Yes	Yes	One of the best and most used essential oils in perfume for soap, blends well with resinoid Orris and Olibanum.
Lemon	No	turpentine like odor	6	1	—	fresh weak	Yes	No	It can be used and is used in soap but is not lasting enough to be recommended.
Lemongrass	Yellow brownish spots	Turns resinous	12	1	—	fresh weak	No	No	Not recommended, fades too quickly.
Limes distilled	No	turns turpentine	12	1	—	weak	No	No	Odor not interesting for soap.
Limes expressed	Yes	fades gradually	25	5	—	fresh	Yes	Yes	Gives much better results than Lemon for Lemon type of odors but too expensive in price.

Name of Product	Discoloration	Change in character of odor	Lasting index wrapped	Lasting index unwrapped	Good as anti-oxidant	Intensity of odor	Good for white soaps	Good for colored soaps	Observations
Linaloe	No	stable	50	3	—	sweet	Yes	Yes	More woody than Linalool but has a similar odor.
Lovage	No	very stable	50	15	—	strong sweet	Yes	Yes	Peculiar odor suitable for bouquets. Very stable.
Mace	No	stable	30	15	—	medium	Yes	Yes	Light spicy odor.
Marjoram	No	stable	15	3	—	—	Yes	Yes	Good for top note of perfume only.
Myrtle	No	stable	30	15	—	—	—	—	
Neroli genuine	No	fades	30	10	—	—	Yes	Yes	Impossible to use on account of its price, if not genuine will discolor.
Nutmeg	No	stable	30	15	—	—	Yes	Yes	For spicy odors.
Orange	No	turns terpenic	10	2	—	—	No	No	Not recommended because the odor is not lasting and turns bad too quickly.
Origanum	No	fades slowly	30	10	—	—	Yes	Yes	Behaves like oil of Thyme, which it resembles.
Patchouly	No	No	50	50	—	strong	Yes	Yes	The oil has a dark brown color which may darken white soaps if used in large amounts but this oil is one of the best to use in soaps.
Peppermint	No	very stable	40	15	—	strong	Yes	Yes	Suitable for cologne type of odor. Very refreshing.
Petitgrain all qualities	No	fairly stable	50	10	—	medium	Yes	Yes	One of the best Essential Oils to use in soaps tho it changes slightly in character of odor after standing.
Pimento	Yes	No	40	10	—	—	No	Yes	Colors, but not as much as Clove.
Pine Needle Siberia	No	fade	20	10	—	medium	Yes	Yes	Not very lasting, turns terpenic at times, but can be used with resin Olibanum as fixative.
Pinus Sylvestris	No	fade	10	5	—	—	No	No	Turns terpentine very quickly, not recommended.
Rosemary French	No	fading	30	10	—	strong	Yes	Yes	Very often adulterated with portions of Spanish, when pure is very agreeable as an odor.
Rosemary Spanish	No	fairly stable	25	10	—	strong	Yes	Yes	Turns slightly camphorish, often adulterated with turpentine which makes it turn more quickly.
Sage Dalmatian and Spanish	Yes	fairly stable	25	10	—	strong	No	Yes	Develops yellowish tint after standing 2 or three weeks.
Sandalwood E. I. or Australia	No	very stable	50	50	—	weak	Yes	Yes	Odor develops in soap after standing. One of the best oils to use for perfuming soap.
Tansy	No	very stable	50	50	—	strong	Yes	Yes	Aromatic odor resembling wormwood useful in bouquet odor. Very stable.
Spearmint	No	very stable	50	50	—	strong	Yes	Yes	Useful in blended bouquets. Very stable.
Thyme red	No	changes gradually	40	15	—	strong	Yes	Yes	Agreeable aromatic odor useful in Cologne bouquets.
Thyme white	No	changes gradually	40	15	—	strong	Yes	Yes	Behaves like red Thyme.
Verbena (true)	None	fairly stable	30	10	—	medium	Yes	Yes	Very scarce in U. S. A. Products sold are mostly imitations, unstable based upon citral. Very popular in France, must be blended with soluble resins.
Vetyvert Bourbon	None	perfectly stable	50	50	—	medium	Yes	Yes	Odor more woody than the Java but very excellent base for soap odors.
Vetyvert Java	None	perfectly stable	50	50	—	medium	Yes	Yes	More delicate than Bourbon in odor. Absolutely stable in soap.
Wormwood	No	very stable	50	50	—	strong	Yes	Yes	Very lasting and suitable for all soaps, interesting odor.
Ylang-Ylang	None	slowly fading	25	10	—	medium	Yes	Yes	Must be blended with soluble resins in order to retain its odor in soaps, Labdanum, Balsam Peru, Styrox blend particularly well.

Aromatic Chemicals

(Group II)

Name of Product	Discoloration	Change in character of odor	Lasting index wrapped	Lasting index unwrapped	Good as anti-oxidant	Intensity of odor	Good for white soap	Good for colored soap	Observations
Acetophenone	No	perfectly stable	50	40	—	strong	Yes	Yes	Blends well with Labdanum soluble resin. Very stable and good for all soaps.
Fatty Aldehydes C ⁸ to C ¹² Lauric	No	fading	10	4	—	strong at first	—	—	May be used to boost an odor in a wrapped soap otherwise unsuitable. Not lasting enough.
Aldehyde Methyl Nonylacetate	No	fading	15	6	—	strong at first	Yes	Yes	Same observation as above. In combination with natural gums (Labdanum) gives better results.
Aldehyde C ¹⁴ Peach (Lactone)	No	fairly stable	20	10	—	sweet	Yes	Yes	Not extremely lasting but give good results in combinations of bouquet odors.
Aldehyde C ¹⁶ Strawberry (ester)	No	fairly stable	25	12	—	medium	Yes	Yes	
Amylcinnamic Aldehyde	No	stable	50	40	—	sweet	No	No	Sometimes gives slight yellow coloration in white soap. Must be associated with Ionones.
Anisic Alcohol	No	stable	50	40	—	weak	Yes	Yes	Is little used but deserves better consideration on account of stability.
Anisic Aldehyde from Anethol	No	fading	10	4	—	weak	Yes	Yes	Not recommended but may be useful in certain bouquets. If made from paracresol, discolors slightly.
Anisic Acetate	No	fairly stable	25	15	—	sweet penetrating	Yes	Yes	Deserves better recognition by soap makers. Good in violet and gardenia types of odors.
Alcohols Fatty from C ⁸ to C ¹²	No	fairly stable	40	20	—	strong	Yes	Yes	Give much better results than Aldehydes as they are more stable.
Amylphenyl Acetate	No	fairly stable	40	20	—	medium	Yes	Yes	Good for all soaps. Good for sweet honeylike odors.
Anethol	No	stable	40	20	—	sweet	Yes	Yes	Not very much used but deserves better attention. Good as a sweetener in bouquet odors and jasmin for soap.
Amyl Salicylate	No	stable	40	6	—	mild	Yes	Yes	Watch for discoloration with iron salts and dirty iron kettles, otherwise good in all soaps.
Amylic esters (low molecular weight) Acetate, butyrate, etc.	No	fading	10	1	—	sweet	Yes	Yes	Not very lasting, but good as a top-note in chypre and jasmin bouquets.
Benzaldehyde F. F. C.	No	fading	5	3	—	strong	Yes	Yes	If not absolutely F. F. C. will discolor. Odor not very lasting but may be useful in bouquets containing large amounts of soluble resins particularly Benzoin and Balsam Peru.
Benzophenone	No	no	50	40	—	medium	Yes	Yes	To use as a fixative in rose and sweet bouquet odors. Very good.
Benzylidene Acetone	No	no	25	10	—	medium	Yes	Yes	Blends well with Lavender odors.
Benzylacetate	No	fading	30	4	—	medium	Yes	Yes	Indispensable for making floral odors. Soluble resins, particularly Orris, balsam Peru, and balsam Tolu will help to make it lasting.
Benzylalcohol	No	no odor	0	0	—	none	Yes	Yes	Only used as an odorless solvent for Resins or crystalline products.
Benzylbutyrate	No	fading	25	5	—	medium	Yes	Yes	Sweeter than benzylacetate, useful for Jasmin odors. Should be used mixed with soluble resins.
Benzylcinnamate	No	no	30	10	—	weak	Yes	Yes	Used sometimes as a fixative.
Benzyl formate	No	unstable	10	2	—	strong but fades	No	No	Not recommended much except in special bouquets as it decomposes easily.
Benzyl propionate	No	fading	35	6	—	medium	Yes	Yes	To be used same as benzylacetate.
Borneol	No	slightly camphorish	50	25	Yes	medium	Yes	Yes	Useful for Pine odors.
Bornylacetate	No	gets slightly camphorish	50	25	—				Gets the camphorish odor of Borneol after standing. Used in Pine-needle odors.

Name of Product	Discoloration	Change in character of odor	Lasting index wrapped	Lasting index unwrapped	Good as anti-oxidant	Intensity of odor	Good for white soap	Good for colored soap	Observations
Bromstyrol	Slight yellow in light	turns acid	50	6	—	strong but fading	No	Yes	Personally we do not like this product very much in soap as it takes on a disagreeable odor after standing.
Benzylbenzoate	No	no odor	—	—	Yes	none	Yes	Yes	Used as anti-oxidant and solvent for Musk and crystalline products.
Carvol	No	gradual	25	15	—	medium	Yes	Yes	Although little used, is very interesting in Bouquet odors.
Cinnamic Alcohol	No	no	40	25	—	weak	Yes	Yes	Used for Lilac odors in combination with Styrox. Not very strong but brings valuable character to bouquets.
Cinnamic Aldehyde	Develops yellow spots	gradual fading	40	10	—	strong	No	Yes	Recommended as being satisfactory in many bouquets especially the oriental type for colored soaps.
Cinnamyl Acetate	No	gradual fading	30	15	—	medium	Yes	Yes	Nice character, stronger than Cinnamic Alcohol.
Citral	Forms yellow spots	gradually turns resin like	12	1	—	medium	No	?	Value in soap doubtful, except in bouquets with fixative resins.
Citronellol	No	gradual	50	25	Yes	weak	Yes	Yes	Indispensable in Rose odors. Odor fades gradually but is perceptible to the end, and is always agreeable.
Citronellal	No	turns to isopulegol	4	1	—	strong	Yes	Yes	Not lasting enough to be of great interest. Polymerizes rather quickly and turns to isopulegol odor.
Citronellyl Acetate	No	fading	25	10	—	medium	Yes	Yes	For Rose and Lily of the Valley.
Coumarine	No	gradual	50	30	Yes	lasting sweet	Yes	Yes	Good fixative and sweetener, excellent for all soaps.
Cuminic Aldehyde	No	gradual fading	25	15	—	strong	Yes	Yes	Good uplifter of odor. Use 1 or 2% of the formula. Good in carnation.
Dimethyl Hydroquinon	No	gradual	50	30	Yes	medium sweet	Yes	Yes	Good fixative useful in Jasmin and other floral odors.
Diphenyloxide	No	gradual	50	30	Yes	sweet	Yes	Yes	Useful in Rose odors. Perfectly stable.
Diphenylmethane	No	gradual	50	30	—	sweet	Yes	Yes	
Dimethylanthranilate Natural	No	gradual	50	25	—	strong	Yes	Yes	Useful to replace Methylanthranilate in Orange Blossom odors.
Dimethylanthranilate synthetic	Slightly yellowish spots	gradual	40	20	—	medium	No	Yes	Safer to use only in colored soaps as it contains very often monomethylanthranilate which discolors.
Ethylbenzoate	No	stable	20	10	—	strong	Yes	Yes	Good for top note in bouquets.
Ethylcinnamate	No	fairly stable	25	10	—	medium	Yes	Yes	Good as a fixative for Cologne odors.
Ethylvanillin	Turns brown	stable	50	50	—	sweet	No	Yes	Not good, except in colored soap, because it discolors. Discolors less than Vanillin as it is more concentrated in odor value.
Eucalyptol	No	fairly stable	40	25	Yes	medium	Yes	Yes	Blends well with Lavender.
Eugenol	Turns brown	Turns disagreeable unstable	25	10	—	medium	No	No	Should be rejected.
Geraniol	No	stable fading	30	10	—	weak	Yes	Yes	Absolutely alkali proof, but not very lasting.
Geranylacetate	No	fading	10	2	—	medium	Yes	Yes	Not very lasting. Otherwise good especially if used with soluble resins.
Geranylbutyrate	No	fading	12	2	—	medium	Yes	Yes	Same as Geranyl acetate.
Geranylformate	No	fading	10	2	—	medium	Yes	Yes	Same as Geranyl acetate but not very stable.
Heliotropin	Not always	stable	40	25	—	sweet	No	Yes	Discolors when not absolutely pure. Discolors also when exposed to the light. Would not recommend for use in white soaps.
Hydrotrropic Aldehyde	Turns brown	turns bad	1	0	—	pungent	No	No	Not recommended for any soap.

Name of Product	Discoloration	Change in character of odor	Lasting index wrapped soap			Good as anti-oxidant	Intensity of odor	Good for white soap	Good for colored soap	Observations
Hydroxy citronellal	Turns yellowish	turns bad	1	0	—	weak	No	No	No	Not to be recommended in soap as it polymerizes and fades very quickly.
Indol	Turns brown	stable	50	50	—	strong	No	Yes	Yes	Can only be used in colored soap.
Isoborneol	No	fairly stable	20	10	—	fresh medium	Yes	Yes	Yes	Refreshing Pine odor not very lasting.
Iso-eugenol	Yes	turns bad	1	0	—	medium	No	No	No	Cannot be used in soap.
Iso safrol	No	stable	50	25	—	medium	Yes	Yes	Yes	Used only in cheap Toilet soaps.
Linalool	No	fairly stable	40	4	—	sweet	Yes	Yes	Yes	Good product, sweet and lasting, especially when associated with Styrax or labdanum. S. R.
Linalylacetate	No	fairly stable	40	4	—	sweet	Yes	Yes	Yes	Very good in Jasmin and Lily of the Valley odors.
Menthol	No	fading	15	4	—	strong	Yes	Yes	Yes	Refreshing, blends well with Bergamot, Lavender, etc. Use sparingly for fresh note, not very lasting.
Methylacetophenone	No	stable	40	6	—	strong	Yes	Yes	Yes	Good in all kinds of soaps, Gardenia, New Mown Hay odors.
Methylanthranilate	Yes	turns bad	—	—	—	sweet	No	No	No	Odor fading and turning bad within a week.
Methyl Benzoate	No	fairly stable	30	1	—	strong	Yes	Yes	Yes	Odor fading gradually but stable.
Methyl cinnamate	No	stable	50	10	—	mild	Yes	Yes	Yes	Used as a fixative for certain odors.
Methyl Naphthyl Ketone (ketone D)	No	stable	50	30	—	sweet	Yes	Yes	Yes	Replaces advantageously Methylanthranilate in orange blossom or other odors.
Methylheptenone	No	turns slightly acid	20	5	—	sweet	Yes	Yes	Yes	Not especially recommended as it turns rather quickly.
Methylheptin carbonate	No	fading	20	5	—	sweet	Yes	Yes	Yes	Good, but not very lasting.
Methyl octin carbonate	No	fading	20	5	—	sweet	Yes	Yes	Yes	Good, but not very lasting.
Methyl para cresol	No	fairly stable	16	2	—	strong	Yes	Yes	Yes	Can be used in small quantities in floral bouquets odors to uplift them, but odor is not very agreeable after standing.
Methylphenyl acetate	No	stable	20	6	—	strong	Yes	Yes	Yes	Can be used to advantage in Bouquet odors.
Methyl salicylate	No	stable	50	40	—	strong	Yes	Yes	Yes	Used mostly in medicinal soaps.
Musk Ambrette	No	very stable	50	50	—	sweet strong	Yes	Yes	Yes	Certain makes of Musk Ambrette discol. See our test on Musk. Is the best artificial musk for soap.
Musk Ketone	No	very stable	50	40	—	sweet medium	Yes	Yes	Yes	Not as strong as Ambrette but finer in odor.
Musk Xylene	No	stable	50	40	—	sweet weak	Yes	Yes	Yes	Has not very much odor value, we prefer Ambrette or Ketone.
Nerolin Ethyl Beta Naphthol	Orange yellow	stable	50	40	—	sweet	No	Yes	Yes	Can only be used in colored soaps, is very lasting.
Nonylacetate	No	fairly stable	25	5	—	strong	Yes	Yes	Yes	Used in small amounts in Jasmin type of odors.
Octylacetate	No	fairly stable	25	5	—	strong	Yes	Yes	Yes	Used sparingly in Rose Tea odors.
Paracresolacetate	No	turns acid disagreeable	16	1	—	strong	—	—	—	Can be used in small amounts in Bouquet odors to uplift them but should be avoided wherever possible as it takes on bad odor after standing.
Paracresol phenylacetate	No	fading	10	2	—	sweet weak	Yes	Yes	Yes	Not very lasting but can be used in small amounts.
Phenylacetaldehyde	Yes	fading quickly	9	1	—	strong	No	No	No	Odor fades quickly and brownish spots develop in the soap.

Name of Product	Discoloration	Change in character of odor	Lasting index wrapped soap				Good as anti-oxidant	Intensity of odor	Good for white soap	Good for colored soap	Observations
			1	%	—	—					
Phenylacetic acid	No	fading quickly	1	%	—	—	sweet	No	No	No	Odor vanishes quickly, unsuitable for soaps.
Phenylethylacetate	No	no	40	12	—	—	sweet	Yes	Yes	Yes	Suitable for all kinds of soap, alkali fast.
Phenylethyl alcohol	No	no	50	25	—	—	sweet	Yes	Yes	Yes	Very good in all soaps.
Phenylpropyl alcohol	No	no	50	5	—	—	sweet	Yes	Yes	Yes	Same as Phenylethyl alcohol.
Phenylpropyl adlehyde	No	fading	10	5	—	—	strong	Yes	Yes	Yes	Not very lasting, but Gums and Resins improve lasting qualities.
Rhodinol	No	very stable	30	20	—	—	sweet	Yes	Yes	Yes	Retains its odor pretty well, especially when mixed with soluble resins.
Safrol	No	very stable	50	50	—	—	medium	Yes	Yes	Yes	Used only for cheap Toilet soaps as odor is ordinary.
Skatol	Turns brown	fairly stable	50	50	—	—	strong	No	Yes	Yes	Used in small amounts in bouquets for colored soaps.
Styrrallyacetate	No	fairly stable	30	2	—	—	strong	Yes	Yes	Yes	Must be associated with soluble resins to be really lasting.
Styrrallyl alcohol	No	stable	30	10	—	—	medium	Yes	Yes	Yes	Is more stable than Styrrallyl acetate but not as strong in odor.
Terpineol	No	fairly stable	40	30	is oxydant	—	weak	Yes	Yes	Yes	Must be kept in stock in glass otherwise may discolor. Sometimes turns turpentine-like in the low grades, oxidizes slightly in soaps.
Terpenyl acetate	No	turns slightly	50	5	—	—	weak	Yes	Yes	Yes	Must be kept in glass containers. Low grades turn turpentine-like after 10 weeks.
Thymol	No	very stable	50	50	—	—	strong	Yes	Yes	Yes	Used mostly in medicated soaps. Very fast.
Vanillin	Turns dark brown	fairly stable	50	30	—	—	sweet	No	Yes	Yes	Keeps its odor very well but turns chocolate brown in a very short time.
Vetyverylacetate	No	stable	50	50	—	—	medium	Yes	Yes	Yes	Excellent product but on account of price must be reserved for expensive soaps.
Vetyverol	No	very stable	50	50	—	—	medium	Yes	Yes	Yes	Very excellent product.
Yara-Yara methyl ester	Turns orange	stable	50	50	—	—	strong sweet	No	Yes	Yes	Very useful in low price colored soaps.

The quantity of perfume used in our experiments was 1% of the quantity of soap stock used. In the case of crystalline or very viscous substances, we put them into solution with diethyl phthalate, four times their weight, in order to obtain a better diffusion of the product in the soap, the percentage of odoriferous product remaining the same. The perfume was introduced in the soap in the regular way and milled twice through a small laboratory milling machine. The soap used in our experiments was regular white toilet soap stock and did not contain more than 0.2 free alkali. Two cakes of

soap were set aside; one wrapped in glassine paper, the other left unwrapped. Both were examined every week and for comparison, an unscented cake of the same soap was used as a standard.

Note the last group (Group V) which follows. This constitutes a convenient reference for use when one starts making a new soap perfume. For detailed information about any particular product, one can refer to the tables. The products listed in this group have a lasting coefficient of at least 30 in wrapped soaps and can be considered soap fast.

Soluble Resins

(Group III)

Name of Product	Discoloration	Change in character of odor	Lasting index wrapped soap	Lasting index unwrapped soap	Good as anti-oxidant	Intensity of odor	Good for white soap	Good for colored soaps only	Observations
Benzoin	Turns brownish	perfectly stable	50	30	Yes	sweet	No	Yes	Very excellent fixative with a sweet lasting odor. If used in small amount will not discolor white soaps very much.
Balsam Peru	d°	stable	50	50	Yes	sweet	No	Yes	Gives good results in floral bouquets for soap.
Balsam Tolu	d°	stable	50	50	—	sweet	No	Yes	Gives very good results in all kinds of bouquet odors.
Castoreum	Slight yellowish	fading slowly	50	15	—	animal	?	Yes	Can be used in small amounts in white soap. Certain qualities reinforced with indol or skatol discolor. Very valuable in blends.
Ciste green labdanum	No	very stable	50	50	—	fairly strong	Yes	Yes	To be used in small amount only in white soap as it has a natural green color, but will not discolor. Very excellent fixative superior to the Spanish product.
Civet	No if pure	stable fading	30	10	—	sweet animal	?	Yes	Valuable only in blends. This product, especially soap quality, very much adulterated giving very irregular results. With pure civet from direct import no discoloration was noticed.
Galbanum	No	stable	50	10	—	strong leafy	Yes	Yes	Gives a green leafy odor in bouquet odors.
Labdanum Spanish	Slight darkening	stable	50	50	—	fairly strong	No	Yes	Gives nice amber tone to bouquet odors especially of the oriental type.
Myrrh	darkens	stable	50	50	—	strong	No	Yes	Give nice oriental odors when blended with olibanum and Ciste.
Olibanum	Slight discoloration	stable	50	50	—	aromatic sweet	?	Yes	Gives sometimes slight discoloration but can be used in small amounts in white soap. Very agreeable aromatic odor.
Orris	No	stable	50	50	—	medium	Yes	Yes	The resinoid is dark but will not discolor. Very good in violet and oriental bouquets.
Oak Moss	Slight darkening	fading	40	10	—	medium	?	Yes	Very good in colored soaps. Turn grayish after a time. Could probably be used in small amount in white soaps.
Opponox	darkens	stable	50	8	—	medium	No	Yes	Darkens slightly in ageing, otherwise good for colored soaps.
Styrax North American	No	very stable	50	50	—	sweet aromatic	Yes	Yes	Sweet aromatic odor very lasting. Good fixative for floral odors.
Styrax Honduras	No	very stable	50	50	—	strong aromatic	Yes	Yes	Has a much higher note than the North American styrax and a great deal more odor value.
Styrax Asiatic	No	very stable	50	50	—	sweet	Yes	Yes	Has much less value than the North American and Honduras styrax but on account of lower price is still very much used.

Essences from Resins

(Group IV)

Benzoin	None	stable	50	30	Yes	sweet	Yes	Yes	Nice sweet odor, quite lasting and much stronger than the soluble resin.
Balsam Peru	None	stable	50	50	Yes	sweet	Yes	Yes	Useful in many bouquets, particularly lily of the valley type.
Balsam Tolu	None	stable	50	50	Yes	sweet	Yes	Yes	Sweet balsamic odor. Useful as a floral or oriental bouquet base.

Essences from Resins

(Group IV)

Ciste green Labdanum	None	very stable	50	50	—	medium sweet	Yes	Yes	Fine amber note, blending especially well with Vetyvert, Patchouly and other balsams.
Galbanum	None	stable	50	20	—	strong leafy	Yes	Yes	Strong leafy character to use sparingly.
Labdanum Spanish	None	stable	50	50	—	sweet	Yes	Yes	Not as stable and fine as Ciste but excellent fixative.
Myrrh	Slight	stable	50	50	—	aromatic	?	Yes	Very sweet, useful in oriental type of bouquets.
Olibanum	None	stable	50	50	—	aromatic sweet	Yes	Yes	Very aromatic useful in all types of bouquets.
Orris	None	stable	50	30	—	woody medium	Yes	Yes	For violet and violet types of bouquet also oriental.
Styrax	None	stable	50	50	—	sweet	Yes	Yes	Forms an excellent aromatic base with all kinds of bouquet odors.

List of Perfuming Materials

Best Suited for Soap Perfumes Having a Lasting Index of at Least Thirty in Wrapped Soap (Group V)

FOR WHITE SOAPS

Essential Oils

Oil of Angelica seeds	Oil of Lovage
Oil of Anise	Oil of Mace
Oil of Basil	Oil of Myrtle
Oil of Bergamot	Oil of Neroly
Oil of Birch sweet	Oil of Nutmeg
Oil of Bois de Rose	Oil of Origanum
Oil of Calamus	Oil of Patchouly
Oil of Cananga	Oil of Pepper (black)
Oil of Caraway	Oil of Peppermint
Oil of Cardamom	Oil of Petitgrain
Oil of Cedarwood	Oil of Rosemary
Oil of Citronella Java	French and Spanish
Oil of Coriander (very good)	Oil of Sandalwood (East India and Australia)
Oil of Cubeb	Oil of Tansy
Oil of Eucalyptus	Oil of Spearmint
Oil of Galbanum	Oil of Thyme
Oil of Geraniums (Bourbon, African, Palma Rosa)	Oil of Verbena (true)
Oil of Ginger Grass	Oil of Vetyvert (Bourbon and East India)
Oil of Guiac Wood	Oil of Wormwood
Oil of Lavender	Oil of Ylang Ylang
Oil of Linaloe	

Soluble Resins

Ciste (French Labdanum)	Styrax Honduras
Galbanum	Styrax Asiatic
Orris	Civet (if pure)
Styrax North American	
All distilled essences from these resins with the exception of Myrrh.	

Aromatic Chemicals

Acetophenone	Linalool
Amylcinnamic Aldehyde	Linalylacetate
Anisic Alcohol	Methylacetophenone
Benzophenone	Methylbenzoate
Benzylacetate	Methylcinnamate
Benzylcinnamate	Methylnaphtyl Ketone
Benzylpropionate	Methylsalicylate
Borneol	Musk Ambrette
Bornylacetate	Musk Ketone
Benzyl benzoate	Musk Xylool
Cinnamic alcohol	See test for discoloration.
Cinnamyl acetate	Phenylethlyc alcohol
Citronellol	Phenylpropyl alcohol
Coumarine	Rhodinol
Dimethylhydroquinone	Safrol
Diphenyloxide	Styrrylacetate
Diphenylmethane	Styrrylalcohol
Dimethylanthranilate natural	Terpineol
Eucalyptol	Terpenylacetate
Geraniol	Thymol
Iso-safrol	Vetyverylacetate
	Vetyverol

FOR COLORED SOAPS ONLY Soluble Resins

Benzoin	Myrrh
Balsam Peru	Olibanum
Balsam Tolu	Oak Moss
Castoreum	Oppopanax
Labdanum Spanish	

Essential Oils

Oil of Bay	Oil of Myrrh
Oil of Cade	Oil of Pimento

Aromatic Chemicals

Bromstyrol	Nerolin (Ethyl Beta Naphtol)
Cinnamic Aldehyde	Skatol
Dimethylanthranilate synthetic	Vanillin
Ethylvanillin	Yara-Yara (Methyl Beta Naphtol)
Heliotropine	Indol

Testing Liquid Insecticides

Official Peet-Grady Method of
National Association of Insecticide & Disinfectant Manufacturers
with Minimum Standard and Oil Specifications

THE minimum standard for general liquid household spray insecticides, and the official Peet-Grady Method for testing such insecticides, as adopted by the National Association of Insecticide & Disinfectant Manufacturers, is published herewith in detail. Specifications for the Pennsylvania oil designated for testing the comparative resistance of house flies bred in one laboratory as compared with those bred in another, are also given.

The exact wording of the minimum insecticide standard as adopted by the Association is as follows: "The members of the National Association of Insecticide & Disinfectant Manufacturers agree that a minimum standard for a general household liquid spray insecticide should be 95% down ten minutes after spraying, and at least 60% kill, twenty-four hours after spraying, as determined by the Peet-Grady Method on house flies. In addition, the liquid base should exceed 120 deg. F. in flashpoint as determined by the Tagliabue open cup method, and should not be referred to as kerosene, kerosene petroleum, or petroleum insecticide base in the future, but as a hydrocarbon distillate base. These tests shall be conducted at a temperature of 85 deg. F. and 60 to 70% relative humidity. To compare the resistance of flies used in one laboratory to those used in another laboratory, this method will be followed out using ordinary kerosene as originating in the Pennsylvania field. Per cent knock down and per cent kill by this oil will be set forth in the complete specification. The flies used in this test shall be five days old."

THE PEET-GRADY METHOD

A Biological Method for the Determination of the Effectiveness of Household Insecticides

This paper is a revision of the original papers from the Research Laboratories of the Röhm and Haas Co., Inc. by C. H. Peet and A. G. Grady, ("Journal of Economic Entomology," vol. 21, pgs. 598-625, August, 1928)

THE STANDARD

The official minimum standard of the National Association of Insecticide & Disinfectant Manufacturers for general household liquid spray insecticides, as recommended by the Insecticide Committee and adopted by the Association, is as follows:

By Peet-Grady Method on house flies—	
Down in ten minutes.....	95%
Dead in 24 hours.....	60%
<hr/>	
Age of test flies.....	5 days
Temperature of chamber.....	85 F.
Relative Humidity of chamber	60-70%
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Flashpoint.....	Not less than 120 F. (Tagliabue Open Cup)

prepared under the supervision of the Insecticide Standardization Committee as a part of the standardization program of the National Association of Insecticide & Disinfectant Manufacturers.

THIS paper details a successful method evolved whereby large numbers of house flies can be reared through the whole year. The technic employed is simple, inexpensive and dependable. Full credit for the continuous breeding of this insect should be given to Glaser¹ who conceived the idea of supplementing the larval medium with yeast cells suspended in water during the winter months.

The literature on the biology of *Musca domestica* has assumed extensive proportions and it is not the intention of the writers to deal with it except to note some observations on the activity and longevity of the imagines during the winter months.

The larvae were reared throughout the winter on a medium consisting of fresh horse manure which was kept in a moist condition with water and yeast cells suspended in water, according to Glaser's method. Excellent results were obtained. Attempts were made

¹ Note on the continuous Breeding of *Musca domestica*, Journ. Econ. Ent., 1927, XX, 432-433.

during the latter half of January and during the month of February to rear flies on horse manure alone. In every case, except two, the insects died either in the larval or pupal stages. In the two successful attempts the horse manure was taken from the stables during a warm spell. Whether this had anything to do with carrying the larvae through to the adult stage was not determined.

From these experiences and the experiences of other investigators it was concluded that unless the horse manure was supplemented during the winter months larval life could not be supported and a continuous supply of insects could not be maintained.

The adult insects thrived exceedingly well on a diet consisting of milk, lump sugar, sweetened bread and yeast suspended in water. About 10 cc. of milk was dropped into the cages every day and about the same amount of yeast suspension was fed every second day. Fresh sweetened bread was placed in the cages about once a week. The bread was kept in an assimilable condition by wetting it with water. Other foods were added to this diet at different times such as beef extract, casein and fish-scrap. However, the adults developed sufficiently well on milk, bread, sugar and yeast so that the strictly protein foods were not used as regular parts of the diet.

The apparatus and equipment used to rear the house flies throughout the winter months were as follows: A constant temperature insectary where the breeding cages, rearing jars and stock cages were kept; breeding cages in which the insects were bred and oviposition took place; rearing jars in which the insect was reared from the egg to the adult stage; and finally, stock cages where the flies to be used for insecticidal tests were kept.

Insectary

A ROOM 12 feet long, 11 feet wide and 9 feet high was thoroughly insulated with "balsam wool." One end and one side wall contained double windows which were lightly sprayed with whitewash. The entrance door was in one corner. Shelves lined three of the walls and a rack of shelves was built in the center of the room. The heating element consisted of four 1 inch steam pipes totaling 72 feet in length running along the inside of the two outside walls of the chamber. A Sarco heat regulator was used to control the temperature of the heating unit.

Electricity may be substituted for steam in heating the room if it is considered more desirable. Excellent temperature control can be obtained by using a unit similar to that manufactured by the General Electric Co., Catalogue No. 2829653 G-3, CR 7002, 110 volt.

A cooling unit consisting of an Aerofin radiator containing 300 feet of $\frac{3}{4}$ inch, finned radiation was suspended in the center of the room from the ceiling and connected to a cold water supply (this water was about 50 to 55° F. summer and winter). A Sylphon thermostatic valve controlled the flow of water through the cooling unit and drip pan suspended beneath the cooling unit caught the condensate which collected on the cooling coils and delivered it by a drain to a sewer line. The temperature regulators were set at 85° F. and a Brown Recording Thermometer showed that the system thus installed was capable of holding the temperature of the insectary to 85° F. $\pm 1^{\circ}$.

The humidifier described in the original paper was later eliminated since it was found that the moisture of the culture medium in the rearing jars kept the humidity of the chamber at about 70%. Strict control could not be obtained without recourse to very elaborate equipment.

Breeding Cages

BECAUSE flies are susceptible to nutritional deficiency diseases and to attacks of parasites and parasitic fungi it was found best to keep the insects used for breeding purposes in relatively small separate cages so that if one colony of breeders became infected the disease could be checked before it spread to the other cages. As a result of this precaution, no high mortality occurred among the flies in the breeding cages that could be laid to a diseased condition.

As it was desired to have on hand hundreds of flies of known ages at all times, six breeding cages were used. Their dimensions were: length, 18 inches; breadth, 9 inches; height, 10 inches. The floor was made of a board $\frac{1}{2}$ inch thick to which the frame was attached. The frame was constructed of $\frac{1}{2}$ inch strips. The upright strips were nailed to the floor of the cage and connected by $\frac{1}{2}$ inch crosspieces. The sides, top and back were made of wire fly screening, (1/16 inch mesh) tacked to the frame. The front was a piece of glass set in grooves which served as a door. These cages are easy to clean, provide plenty of room for the insects to move about and access to the inside is gained easily by pushing up the glass door to introduce food and insects.

Rearing Jars

ORDINARY battery jars 6 inches in diameter by 8 inches high were used for rearing the larvae. These jars were closed by pieces of cheesecloth about 9 inches in diameter which were held in place by $\frac{1}{4}$ inch elastic "garters." This type of top is inexpensive, easily made, gives entirely adequate ventilation, and will serve for a number of generations of flies.

Stock Cages

VARIOUS efforts were made to develop cages which would allow automatic or semi-automatic transfer of flies from the rearing jars but none proved very successful and ultimately the same type of cage was adopted as were used for breeding cages. These cages were numbered in order that the age of the flies contained therein might be recorded.

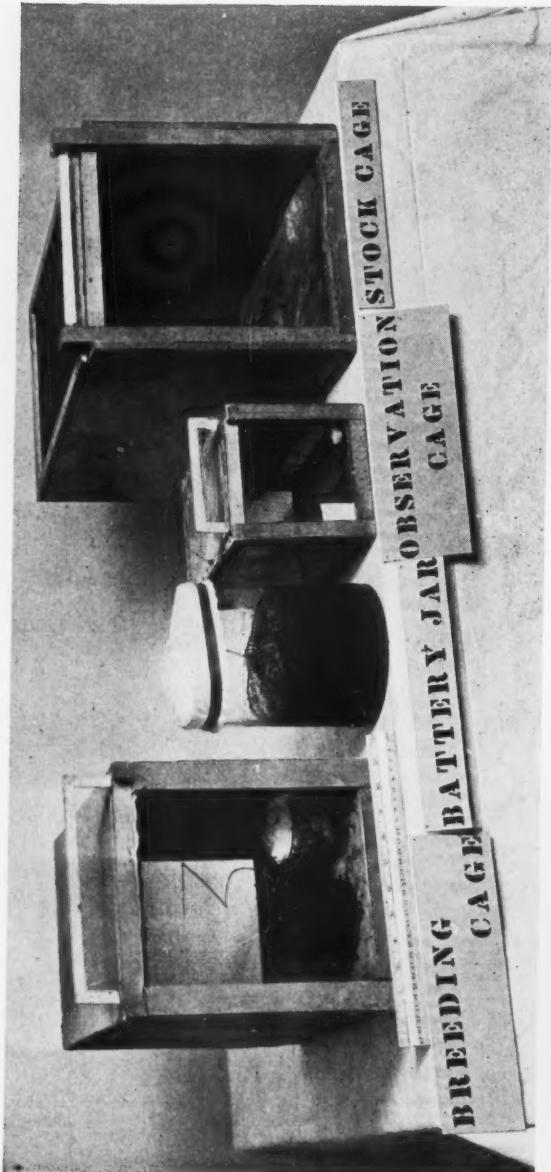
Since flies were not used for insecticide tests after they were 5 days old, only five cages were necessary for a series but when large numbers of flies are being bred, it becomes necessary to have duplicate series of cages in order that overcrowding of the cages may be avoided.

Transfer of the flies from rearing jars to stock cages is accomplished by lifting the glass slide of the cage, inserting the covered end of the rearing jar, slipping off the cheesecloth cover, tapping the jar, withdrawing the jar, closing the glass slide and replacing the cheesecloth cover.

Procedure

IN each of the breeding cages about two hundred adult flies, about equally divided as to sex, were kept. When the insects died or became unduly soiled or injured they were replaced by others. Two 200 cc. beakers filled with wet horse manure were placed in each cage for the flies to oviposit on. In the course of two days hundreds of eggs were deposited on the medium. Every day the beakers containing eggs and larvae were removed. Other beakers filled with fresh horse manure, to which about 15 cc. of water had been added, were then placed in the breeding cages. In this way fresh medium was kept in the breeding cages continually for the flies to oviposit on. It appears that this part of the technic stimulated the responses of the females in regard to oviposition and aided some-

The Required Fly-Breeding Equipment for the Peet-Grody Method.



Left—Maggots of the House Fly in Larval Stage.

Right—Eggs of House Fly Magnified many times.







what in keeping the flies from laying eggs on the adult food, i.e., the sweetened bread.

To insure a large supply of adults, several cultures were started each day. About five or six hundred eggs and larvae, obtained as above, were transferred to each of the rearing jars. Each jar was filled to about the three-fourths mark with fresh, loosely packed horse manure. It was found that if about 200 cc. of water was added to the manure when the culture was started it was sufficient to keep the medium in a moist condition until the adults emerged. The losses resulting from larvae drowning were insignificant. To this 75 cc. of the supplementary food, yeast cells suspended in water, was added and about 10 cc. more was dropped in the jars every other day until the larvae were about ready to pupate. The amount of yeast to be fed varies, of course, with the number of larvae to be reared. It was found that in this case if the amount of yeast suspension was cut down the adults, if they emerged, were apt to be stunted and possess little vitality.

In making up the yeast suspension Glaser advises, "In practice we dissolve a one pound bakery cake of commercial yeast in two liters of water. The suspension of yeast cells is then distributed in pint bottles and autoclaved, to kill fungi which often cause trouble, and stored on ice." We have found that if one pound of yeast is dissolved in two and one half or three liters of water, very good results can be obtained. At first the yeast suspension was autoclaved using pint milk bottles as receptacles. A pyrex flask was later substituted for the milk bottles as these are apt to crack when subjected to high temperatures a few times. A number of cultures were reared using yeast suspension which was not autoclaved. While this part of the technic may be left out, with little or no difference in the results, it is advisable to sterilize the yeast suspension if an autoclave is available.

The horse manure containing eggs and larvae was then emptied onto the fresh medium, the covers fitted on the jars and the culture was incubated at 85° F. The larval medium settled in a few days to about the middle of the jar which gave the adults plenty of room to move about when they emerged.

At this temperature the time required from egg to adult was approximately eleven days. Some of the adults emerged nine days after being placed in the rearing jars and the rest within eleven days. As the flies emerged they were transferred from the rearing jars as previously described and either placed in a stock cage to be held for insecticidal tests or used for breeding purposes. It is advisable to take the flies out of the rearing jars soon after they emerge so as to avoid overcrowding. When large numbers of adults are allowed to stay in the rearing jars they are apt to become excited and mill about the top of the jars in an effort to escape. This often results in a high mortality.

To draw any conclusions from insecticidal tests which would shed light on the toxicity of a compound, the age and the condition of the insects used should be known. This appears to be particularly true of flies. We have found that the adult house fly bred under artificial conditions during the winter months is most active and resistant when it is four to five days old. In comparing results of insecticidal tests run during the summer with wild flies and those reared artificially it developed that winter flies, four or five days old, were more uniformly resistant to toxic compounds than wild summer flies and fully as resistant as controlled cultures developed during the summer. *As the age of the flies was of great importance they were kept in separate cages dependent on the date they emerged.*

After the fifth day flies which had not been used for insecticidal tests or transferred to the breeding cages

THE OIL SPECIFICATION

The Pennsylvania oil, adopted as standard by the National Association of Insecticide & Disinfectant Manufacturers for testing the relative resistance of flies bred in one laboratory as compared with those bred in another, shall have the specifications as listed below:*

A. P. I. Gravity.....	49-50
Flash Point.....	Above 120 F.
Initial Boiling Point	Above 350 F.
End Point.....	Not Above 530 F.
Saybolt Color.....	30 Plus
Odor	Slight
Iodine Number, Hanus.....	Below 1

Such an oil when used without additions by the Peet-Grady Method against house flies should not give more than 20% down and 6% kill. House flies showing these average results shall be considered to have standard resistance to the action of liquid spray insecticides.

were killed. The cage was then thoroughly washed with soap and water and dried. As the adults were continually emerging in the rearing jars it was necessary to use the cage immediately for a new supply. In this way a continuous cycle was maintained with a minimum number of cages.

When flies were needed for insecticidal tests, the stock cage was taken to the testing chamber, the slide was raised slightly until the desired number of insects had escaped into the chamber, the slide was then lowered and the door of the chamber was closed.

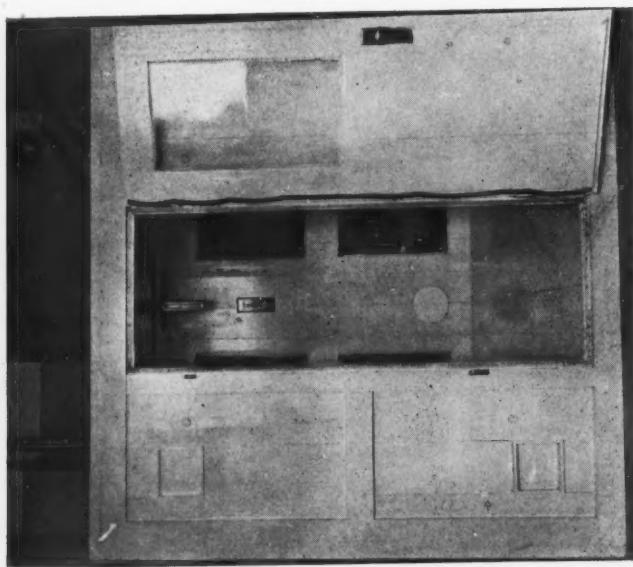
Observations

A FEW observations on the activity and longevity of the adults during the winter months were made. It was found that the adult fly was very active and resistant until about the eighth day after it emerged, reaching what might be called its peak of activity and resistance about the fifth day. The longevity of the adult varied from two to thirty-three days with an arithmetical mean of thirteen plus days. It was also noted that the ovaries and testes developed rapidly and in some cases eggs were deposited by the flies in a little over three days after the time of emergence. Some investigators² have reported that the life of the adult house fly, reared during the warmer seasons, averages approximately twenty days and that the time required for the development of the ovaries and testes was longer by several days than observed in this case. Whether this comparatively short life cycle and rapid development was due to the fact that the flies were continually subjected to a constant temperature of 85° F., a special diet, absence of direct sunlight, or to other factors was not determined.

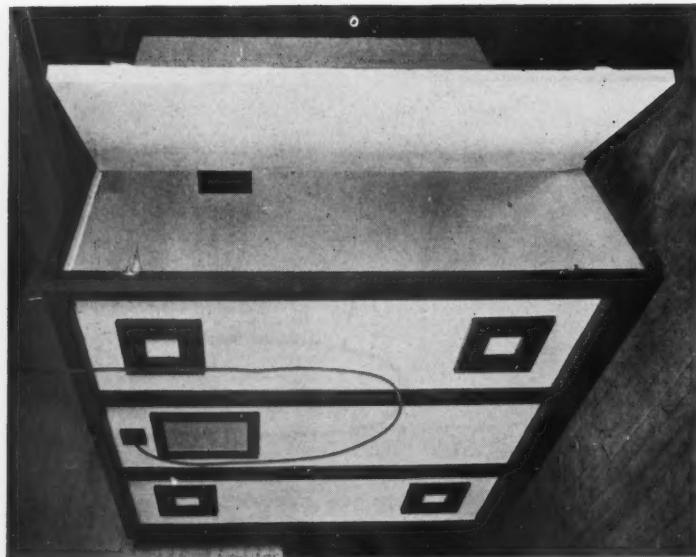
General Testing Considerations

ALTHOUGH a vast amount of work has been done on examining various compounds to determine their value as insecticides, the variations in the methods

² Howard, House Flies, U. S. Dept. Agri. Farmers' Bulletin, 679, 9115; Glaser, Rearing Flies for Exp. Purposes with Biological Notes, J. Econ. Ent., 1924, XVII, 486-496.



View of the interior of the Peet-Grady Chamber, showing temperature and humidity control, and large pipe at top for rapid exhausting following each test.



Exterior View of the standard Peet-Grady Chamber, which is a six foot cube.

of testing these compounds and in the standards set up by the various investigators have made it almost impossible to draw valid comparisons between the results reported. In some cases insects have been tested by exposing them to the fumes of the particular compound being tested even though the compounds were relatively non-volatile and had to be heated in order to volatilize them. In others the compound being studied was dissolved in some oil carrier and dispersed by spraying. Still other determinations of insecticidal effectiveness have been made by completely immersing the insect to be tested in the material under consideration either at 100% concentration or at various dilutions. Obviously there is almost no common ground between these methods of testing. The desirability, however, of formulating some uniform testing procedure is evident and it is hoped that this paper will serve to stimulate other investigators to work upon this problem and to offer such alterations and improvements in technique as may seem desirable.

The most common pest the world over is the fly and the economic significance of the various species of stable flies is so well appreciated that a large program of research upon its control is being undertaken by the government. The annoyances caused by the house fly as well as the danger of infection due to its presence are pointed out in the advertisements of every magazine. The smaller and generally less prevalent fruit flies, gnats, etc., constitute a special problem in certain localities. Accordingly this paper deals specifically with methods of determining the effectiveness of compounds against flies. There is, of course, a great variation in the resistance of the different families of flies to the action of insecticides, but the relative resistance of these various families follows approximately the same curve against all insecticidal compounds. Accordingly, once that curve has been established for all the families, which are sufficiently common to constitute pests, it is only necessary, in testing a new compound, to test it against one or two families in order to locate the curve of its efficiency. This paper makes no attempt to establish these curves but serves solely to point out a method of testing which is applicable to all families of flies.

The determination of toxicity against insects must be a purely biological test and, like all biological tests, is subject to the very considerable variability which accompanies the reaction of the living organism to external effects and influences. This variability is innate in all creatures and cannot be controlled but the superficial variables which have heretofore been ignored, or too little considered, can be so accurately controlled that only the biological variable remains to remove such tests from strict reproducibility and the average will be just as certain as life insurance mortality tables.

The variables which this investigation has shown to possess the greatest significance are: time, temperature, humidity, insecticide concentration, carrier, fineness of spray, air conditions, angle of spray and condition of insect.

It is obvious that it is unfair to draw a comparison between two insecticidal compounds one of which is allowed to work upon the insect for twice as long a time as the other.

The importance of temperature control may easily be demonstrated by exposing two groups of insects from the same brood to the same insecticide at say 60° F. and 85° F. The higher percentage kill among the insects in the warmer chamber will be quickly appreciated.

The influence of humidity on the resistance of the insect to toxic compounds has been generally ignored in testing for insecticidal power. It does not have as great an effect as the temperature differential but it should be considered.

The fact that a higher concentration of material being tested in any given solution should produce a greater or more rapid kill does not require discussion.

The variations in effectiveness produced by variations in spray concentration are less easily demonstrable but undoubtedly just as certain for if the spray or vapor of any material under consideration be more attenuated in one instance than in another, there must be a higher concentration of insecticide in the area which has the greatest spray concentration.

Few carriers are inert but many studies have shown that there is a very considerable difference between the toxicity of these numerous relatively inert solvents.³ Accordingly, if one investigator reports on an insecticide using as a carrier a certain fraction of Pennsylvania Oil, another on the same material using a corresponding fraction of California Oil, there will be a disagreement. Similarly if one investigator uses a certain fraction of Pennsylvania Oil and another a different fraction of the same oil, they will obtain different results.

Griffin, Richardson and Burdette⁴ have shown that the size droplet produced by a sprayer has a very marked effect upon the insecticidal activity of the same material. Droplets of 5 to 10 mu produce about the maximum effect whereas droplets of 2 mu and smaller decrease the activity of the insecticide. These conclusions were based upon a study of contact sprays and insofar as the insecticide serves as a contact poison, they will apply to it. If, on the other hand, the insecticide functions in the vapor phase, the rate of evaporation will increase as the droplet size decreases and the reverse conclusion must be drawn. There are two ways of producing these variations in droplet size. One is by changing the type of atomizer or spray and the other by changing the pressure on the same sprayer. Since it is probable that the majority of tests will be made using the same sprayer, the variable which must be controlled is pressure.

By air conditions is meant whether the air is fresh or exhausted but this factor can probably be ignored because the chamber is always aired between tests.

The importance of the angle of the spray is closely related to spray concentration. If the spray enters the chamber from all directions there is much more uniform dispersion of the material under study. Also, of course, this factor is of importance if the spray comes in contact with the insects. If the material being examined is heavy and is sprayed downward upon the fly it is possible that its wings will shield its body or perhaps it would be more correct to say that if the spray were directed upward against the fly there would be greater likelihood of its coming in contact with the more vital parts of the insect.

Condition of the insect is one of the most important factors to be considered. It requires no elaboration to point out that an old fly or a vivified fly or a very young fly or a fly in any way enfeebled will be more susceptible to the action of any toxic material than will a strong healthy individual.

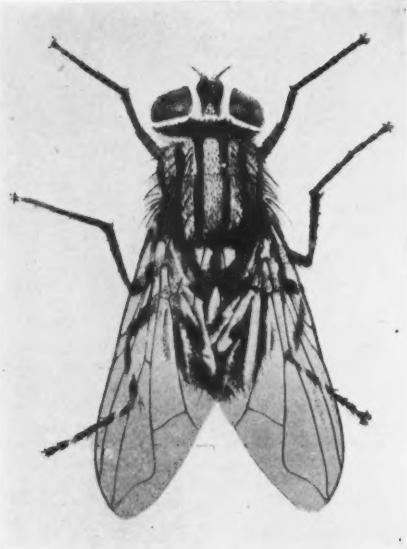
The method of testing which this paper wishes to advocate is as follows:

Chamber: All fly tests should be carried out under conditions which at least approximate those existing in the fly's normal environment and for this purpose a chamber of sufficient size to enable the fly to move about freely and approximately as unrestrictedly as it normally would should be provided. A very satisfactory size has been found to be a 6 x 6 x 6 foot cube. In

³ Moore & Graham. A study of the Toxicity of Kerosene, Jour. Econ. Ent., 1918, XI, 70-75.

⁴ Griffin, Richardson & Burdette. Relation of Size of Oil Drops to Toxicity of Petroleum-Oil Emulsions to Aphids. Jour. of Agri. Research, Vol. 34, Pages 727-738.

Below—Appearance of the floor of the Peer-Grady Chamber ten minutes after spraying. These flies are carefully taken up and kept in an observation cage for 24 hours.



Below—24 hours after the test, the "deads" in the observation cage are counted. They should show a minimum of 60%.

The Common House Fly, *Musca Domestica*.



the studies upon which this paper is based, this chamber was made of wood with the bracing members on the outside, leaving the inside as free from projections, corners, ledges, etc., as possible. The inner surfaces were originally well painted with white enamel in order to prevent absorption, by the wood, of material being tested. This paint, however, adsorbed and absorbed a certain proportion of the oily materials being studied and, although it was carefully wiped out after each test, it was impossible to remove all traces of the preceding materials. Accordingly, the inside, including floor and ceiling, was lined with transite board, an asbestos composition, all corners were sealed with a Silex-sodium silicate cement and the walls were rendered as nearly non-absorbent to oils as possible by painting with sodium silicate. In the center of the ceiling a glass window was set with a light bulb above it for illumination. A tight closing door, large enough for a man to enter, was set in one wall and the adjoining walls were provided with glass windows in the center of each. These same walls each had four square ports 6 x 6 inches covered with wire gauze and provided with tight fitting hatches. Each wall had two one-half inch holes bored through it six inches from the ceiling and closed by corks.

Procedure: Each test was run upon a considerable number of flies, 5 days of age, never less than 100 and usually rather more but not exceeding about one per cubic foot. These were liberated in the chamber, which was kept at 85° F., and the insecticide was introduced through the one-half inch holes along the ceiling by means of a modified Devilbiss atomizer No. 152 with No. 631 cut-off.

The modification consisted in replacing the reservoir of the atomizer by a narrow 20 cc. cylinder made by cutting off an ordinary burette and sealing one end and in substituting a sufficiently long outlet tube to reach practically to the bottom of the cylinder, for the shorter one which is standard equipment.

By filling the atomizer above the lower end of the outlet tube and spraying until no more spray is delivered when the burette tube is in a vertical position, the zero point of the graduated atomizer is determined. If 12 cc. of insecticide is now added above this zero figure, the atomizer will deliver exactly 12 cc. before it returns to its zero and ceases to deliver. The accuracy of this equipment is about 0.1 cc.

This atomizer was operated at 12½ pounds pressure from a constant pressure airline controlled by a Hoke

reducing valve. The amount of solution used in each test was 12 cc. and this was sprayed in about equal quantities through each top hole. The door and all ports were, of course, tightly closed during this procedure. The chamber was kept closed for ten minutes, during which time observations on the flies could be made through the windows to study the manner in which the material being tested was affecting them. At the end of ten minutes the square ports were all opened, a Buffalo exhaust fan turned on, and the number of flies still clinging to the walls and ceiling was counted through the side windows. The flies which had dropped were carefully gathered up and transferred to clean observation cages in which food and cotton gauze soaked in water had been placed. These cages had wooden bases 6 inches square, wire gauze back and sides and a sliding glass front.

It was considered that the flies still off the floor had escaped the action of the insecticide. The flies in their gauze cages were kept for twenty-four hours to observe whether there was ultimate recovery or death. At the end of this period, these insects were counted and the number still alive added to those which had been on the walls on the chamber. The Buffalo exhaust fan swept out the chamber by sucking air through it and afterward the floor and walls were thoroughly wiped off with an absorbent cloth.

The number of flies still off the floor at the end of the ten minute period divided by the total number liberated in the chamber gives the "knock-down in 10 minutes." The number lying dead in the observation cages after 24 hours divided by the total number originally taken gives the "percentage kill."

The variables thus far held in control are time, temperature, spray concentrations, pressure in spray, air conditions, angle of spray, and kind of insect. The condition of the insect is more particularly dependent upon how it has been bred and this phase of the problem is discussed in the first part of this paper.

Tests conducted following this procedure show a low average variation and it is entirely reasonable to presume that any investigator could obtain very uniform results following the method.

[The helpful criticism of Dr. W. S. Abbott of the U. S. Dept. of Agriculture and the suggestions embodied in the papers of Dr. R. W. Glaser of the Rockefeller Institute for Medical Research as well as his personal assistance were invaluable in the inauguration of this work.]

Testing Antiseptics and Disinfectants

Methods Prescribed for Use in Enforcement of the Insecticide Act of 1910

By G. L. A. RUEHLE and C. M. BREWER

Insecticide Control, Food & Drug Administration

ALL antiseptics and disinfectants shipped or offered for shipment in interstate commerce or offered for import into or export from the United States are subject to the provisions of the Federal insecticide act, the Federal food and drugs act, or both. In the enforcement of these acts it is necessary to determine the accuracy of the bactericidal and antiseptic claims made for such products. A number of methods have been developed for determining bactericidal effectiveness, but all of them possess certain disadvantages. Of course it is impossible to devise tests which will apply in all cases, but during the past 20 years the Insecticide and Fungicide Board and the Food and Drug Administration have found certain methods to be particularly well adapted to their purposes.

Confusion has arisen from the fact that, in many cases, manufacturers have not used the same methods of testing their products, as a basis for preparing their labels, as those used by the administration. This possibility of misunderstanding would be obviated if the same methods were employed by all, and many manufacturers, recognizing this, have requested information as to methods employed by the Food and Drug Administration. In view of this, it seemed desirable to publish them in a form which would make them generally available.

This circular, therefore, describes briefly the methods usually employed in the insecticide control laboratory for testing official samples of antiseptics and disinfectants. No attempt is made to review the literature of disinfectant testing in detail, but the most important papers relating to the methods here presented are cited.

Determination of Phenol Coefficient¹

There are in general use at the present time three methods of determining the phenol coefficient; the Hygienic Laboratory (H. L.) method (II)², that of Rideal-Walker (R-W) (7), and the method developed by this laboratory. It had been realized for a long time, especially among qualified workers in the field of phenol coefficient testing, that there were numerous handicaps and minor deficiencies to be encountered in the routine manipulation of both the H. L. and R-W methods. Lloyd P. Shippen, formerly bacteriologist of the Insecticide and Fungicide Board, after much experience in the testing of disinfectants, devised a method for obtaining phenol coefficients, utilizing as its basis the best features of the two older tests. Under pressure of a great volume of routine work this method was first put into practice more than 15 years ago and found to be so satisfactory that it has come to be used for testing the

great majority of the germicides now received at the Food and Drug Administration.

George F. Reddish, successor to Doctor Shippen, later published this method under the name, "The R-W modified method" (5).

The procedure of Shippen has been little changed, but the standards for the resistance of the test organisms, *Eberthella typhi* (Schröter) Buchanan,³ and *Staphylococcus aureus* Rosenbach, have been firmly established and provisions for the use of other organisms have been added. The method, as here published, is designated the "Food and Drug Administration phenol coefficient method" or briefly, the "F. D. A. method."

The differences in the three methods are shown in Table 1. (See Next Page.)

There need be very little confusion arising from substituting the F. D. A. method as a test for products previously tested by either the R-W or the H. L. methods. The phenol coefficients of the large number of substances chemically related to phenol (the only type of disinfectants for which the H. L. method is accepted) (II) are, in most cases, practically the same, whether tested by the F. D. A. or the H. L. method. Not only has continued use of the method in this laboratory shown this to be true (2), but collaborative experiments in five other laboratories (unpublished) confirm this fact. In comparing this method with the R-W method, similar results in general are obtained, although a somewhat lower coefficient usually results with coal-tar products having high coefficients. However, the higher results sometimes obtained by the R-W method may be misleading. R-W broth is not well adapted for the optimum growth of the test organism; hence nega-

¹ For the benefit of those unfamiliar with testing disinfectants a brief statement of the principles of determining phenol coefficients is made. The phenol coefficient is a figure expressing the ratio of the killing efficiency of a disinfectant as compared with that of phenol tested under identical conditions. The sample to be tested is diluted and the dilutions arranged in a series of decreasing concentrations (increasing dilutions). To these a specified amount of the test organism if broth culture is added. At the end of fixed periods of time a small portion of the mixture of diluted disinfectant and test organism is transferred to a nutrient culture medium and incubated. No growth in the subculture indicates that the organism has been killed. The greatest dilution (weakest concentration) of the disinfectant killing in a definite time period is divided by the greatest dilution of phenol killing in the same time period. This ratio is the phenol coefficient. It should be noted that the phenol coefficient is not based on a comparison of different time intervals but on a comparison of different concentrations acting for specified time periods.

² Italic numbers in parentheses refer to Literature Cited, Page 166.

³ Throughout this paper the term *Eberthella typhi* is used for *Bacillus typhus*, in accordance with the nomenclature adopted by the committee on classification of the Society of American Bacteriologists (1).

TABLE 1.—*Differences in media and manipulation of the three methods of determining phenol coefficient.*

Item	F. D. A. method	R-W method	H. L. method
Composition of medium.....	Peptone ¹ , 10 gm. Liebig's beef extract, 5 gm. Salt, 5 gm. Water, 1,000 c. c. Boil 20 minutes.	Peptone ² , 20 gm. Liebig's beef extract, 10 gm. Salt, 10 gm. Water, 1,000 c. c. Boil 30 minutes	Peptone ¹ , 10 gm. Liebig's beef extract, 3 gm. Salt, 5 gm. Water, 1,000 c. c. Boil 15 minutes.
Acidity of medium.....	pH 6.8	+1.5. No definite pH.....	Unadjusted but pH between 6.0 and 7.0.
Amount of culture medium in tube.....	10 c. c.	5 c. c.	10 c. c.
Amount of culture added to diluted disinfectant.....	0.5 c. c. to 5.0 c. c.	0.5 c. c. to 5.0 c. c.	0.1 c. c. to 5.0 c. c.
Resistance of test culture to phenol (dilutions killing in 10 minutes but not in 5 minutes).	1.90	1.90 to 1.110	No limits stated.
Condition of tube in test.....	Plugged with cotton.....	Plugged with cotton.....	Open tubes.
Temperature of test.....	20° C.	15-18° C.	20° C.
Time intervals of the test.....	5, 10, and 15 minutes	2½, 5, 7½, and 10 minutes	5, 7½, 10, 12½, and 15 minutes.
Amount of medication mixture transferred (size of loop).	4 mm. loop (of No. 23 B. and S. gage wire).	4 mm. loop (of No. 27 Imperial gage wire).	Spiral loop (four spirals wrapped around a No. 13 B. and S. gage wire. Made of No. 23 B. and S. gage wire).
Calculation of phenol coefficient.	Highest dilution not killing in 5 minutes but killing in 10 minutes divided by same for phenol.	Highest dilution not killing in 5 minutes but killing in 7½ minutes divided by same for phenol.	Mathematical mean of highest dilutions showing no growth in 5, 10, and 15 minutes divided by same for phenol.

¹ Armour's. Special batch set aside for disinfectant testing.² Allen and Hanbury's.

tive subcultures frequently indicate that the organism has been killed, when in fact it may have been only rendered incapable of growing in this culture medium.

The curtailment in labor, time, and material through the use of the F. D. A. method renders it particularly valuable where a large number of samples are involved. The F. D. A. method is considerably superior to the R-W method in producing consistent results (4, 12). The medium employed is better adapted to bacterial growth, and the technic is not restricted to the use of one test organism (*Eberthella typhi*) as is the case of the R-W and H. L. methods. Moreover, the stock cultures of *E. typhi* and *Staphylococcus aureus*, the organisms principally used in germicidal testing, remain sufficiently constant in their resistance to phenol, when grown on an adjusted medium, to necessitate but one phenol control, though two controls are used frequently as an additional check. This allows the use of nine dilutions of the unknown with 30-second intervals between transfers, or 14 when 20-second intervals are used. With a little practice, 20-second intervals allow sufficient time.

The F. D. A. method will be used by this laboratory in determining the dilutions at which miscible coal-tar disinfectants, and many other products to which the method is applicable, should be used for disinfecting purposes. As heretofore, this dilution should be at least equal in strength to a 5 per cent solution of phenol when tested against *Eberthella typhi* (20 times the phenol coefficient figure) and should be based on a phenol coefficient not higher than that obtained by the F. D. A. method.

Food and Drug Administration Method

THE test organism is a 22-26 hour culture of *Eberthella typhi* (Hopkins strain) incubated and grown in nutrient broth at 37° C. The broth contains the following ingredients: 5 gm. of Liebig's beef extract, 5 gm. of chemically pure sodium chloride, and 10 gm. of Armour's peptone (for disinfectant testing) in 1,000 c. c. of distilled water. The mixture is boiled for 20 minutes, made up to original weight (or volume) with distilled water, and adjusted with NaOH to pH 6.8 using the colorimetric method (3, p. 405-421.) It is then filtered through paper, tubed (10 c. c. to each tube), and the tubes plugged with cotton and sterilized at 15 pounds pressure for 40 minutes. The test culture is transferred daily in this medium for not more than one month. At the end of each month, a fresh transfer is made from the stock culture. The stock culture is carried on agar slants of the same composition as the broth medium plus 1½ per cent Bacto-Agar (Difco), adjusted to pH 7.2 to 7.4. This medium is also filtered, tubed, plugged with cotton, sterilized, and slanted. The stock culture is transferred once a month, and the test organism is taken from the month-old stock culture. When the test organism has not been transferred daily, it is advisable to make four or five consecutive daily transfers in broth before using it for testing purposes, to be reasonably sure of its conforming to the phenol resistance requirements. When only one transfer has been skipped the following transfer from the 48-hour culture is usually satisfactory for use after 24 hours.

Transfers are made with the platinum loop used in the test. Only cultures giving readings within the following limits are considered satisfactory:

Phenol:	5 minutes	10 minutes	15 minutes
1-90	+	+	0
1-100	+	+	+
or			
1-90	0	0	0
1-100	+	+	0

The following reading is that most usually obtained and is the most convenient:

Phenol:	5 minutes	10 minutes	15 minutes
1-90	+	0	0
1-100	+	+	+

Phenol

The phenol used must meet the requirements of the United States Pharmacopoeia, and in addition the congealing point must not be below 40° C. A 5 per cent solution may be used as a stock solution if kept in a relatively cool place in well-stoppered amber-colored bottles protected from the light. This 5 per cent solution should be standardized with decinormal bromine (described under "phenol" (10, p. 283), or with sodium bromide and bromate solution (9, pp. 404-405).

Apparatus

Besides a number of accurately graduated pipettes, 100-c. c. glass-stoppered graduates or volumetric flasks are almost essential for the making of correct dilutions. All pipettes and graduates should be standardized. The test tubes for containing the dilutions should be large enough to permit transfers being made without touching the sides with the transfer needle. Lipped pyrex (to withstand constant flaming) test tubes 25 by 150 mm. serve very well as these seeding or medication tubes. A water bath for holding the dilutions at the desired temperature must be provided. To maintain the temperature practically constant during the period of the test, the bath should be made so as to contain a relatively large volume per surface area, and should be insulated. The lid is made with well-spaced holes admitting the 25-mm. tube, but not the lip. The most convenient form of subculture tubes (tubes containing medium for incubating the tested organisms, as well as for growing the test culture) are ordinary non-lipped bacteriological test tubes 20 by 150 mm. The racks for holding the subculture tubes may be any convenient style. Blocks of wood with a series of holes bored in them are quite satisfactory. Dimensions depend somewhat on the size of the incubator, but the holes should be well spaced to insure quick selection and easy manipulation during the test. It is an added convenience to have the holes large enough to admit the medication tubes while dilutions are being made. The transfers are made with a 4-mm. (inside diameter) single loop of number 23 B. & S. gage platinum wire, 1½ to 3 inches long, set in a suitable holder such as an aluminum or glass rod approximately 0.5 cm. in diameter.

Procedure

One per cent stock dilutions of the substance to be tested (or any other convenient dilution of the disinfectant, depending on the strength) are made up, usually in the glass-stoppered cylinders or volumetric flasks from which the individual dilutions are then prepared. For rapid routine work, the final dilutions may be made directly in the medication tubes. In this case all excess over 5 c. c. must be removed. For more precise work and when high dilutions are required or volatile sub-

stances are dealt with, it is preferable to make up all of the dilutions in volumetric flasks and then transfer 5 c. c. of the final dilution to the medication tubes. These tubes containing 5 c. c. of each dilution (including the phenol control) are placed in the water bath at 20° C. for five minutes until the temperature of the bath is reached. Even slight variations in temperature may affect the results. The dilutions should cover the range of the killing limits of the disinfectant within 5- and 15-minute periods and should at the same time be spaced sufficiently close together to insure the desired accuracy. Five-tenths of cubic centimeter of the test culture is then added to each of the dilutions at a time interval corresponding to the interval at which the transfers are to be made. Thus by the time 10 tubes have been seeded at 30-second intervals, four and one-half minutes will have elapsed and a 30-second interval intervenes before the transference to the subcultures is commenced. The culture is added from a graduated pipette holding sufficient culture to seed all the tubes in any one set. The pipette may be loosely plugged with cotton at the mouth end before sterilizing, as a precautionary measure. Unfiltered culture is used, but it should be thoroughly shaken 15 minutes before use and allowed to settle. The temperature of the culture should be practically that of the water bath before being added.

In inoculating the medication tubes they should be held in a slanting position, after removal from the bath, and the culture run in without the tip of the pipette touching the disinfectant. The tip may be allowed to rest against the side of the tube just above the surface of the liquid. The tubes are agitated gently but thoroughly after the addition of the culture to insure even distribution of the bacteria. Five minutes from the time of seeding the first medication tube, transfer 1 loopful of the mixture of culture and diluted disinfectant from the medication tube to the corresponding subculture tube. To facilitate transfer of uniform drops of the medication mixture, the loop is bent to form a slight angle with the stem and the medication tube is held at an angle of 60°. In other words, as the loop is withdrawn, its plane should be parallel with the surface of the liquid. At the end of 30 seconds, a loopful is transferred from the second medication tube to the second subculture tube and the process continued for each successive dilution. Five minutes from the time of making the first transfer, a second set of transfers is begun for the 10-minute period and finally repeated for the 15-minute period. Before each transfer the loop is heated to red heat in the Bunsen flame and the mouth of every tube is flamed. Sterilization of the loop is effected immediately after making the previous transfer (before replugging the tubes) to allow time for sufficient cooling. Time does not permit flaming the tubes after making the transfer. For this reason, care in transferring and seeding is necessary. Due caution is observed to prevent either the seeding pipette or the transfer needle from touching the sides or mouth of the medication tube; neither should cotton threads be found adhering to the sides or mouth of these. After completion of the transferring, the subculture tubes are incubated at 37° C. for 48 hours and results read. Microscopic examination usually suffices for this, but occasionally agglutination with antityphoid serum will aid in reading doubtful results. A 3-day incubation period or agar streak or microscopic examination may be resorted to in determining feeble growth, especially when organisms other than *Eberthella typhi* are used.

There are certain types of germicidal agents, such as many of the mercury compounds, which give very high results by phenol coefficient tests (8). Due to the high inhibitory value of such substances in preventing growth

in the subcultures these figures are frequently misleading. For germicides used in the disinfection of such objects as surgical instruments, this is of particular importance and must be taken into account. Failure to appreciate this characteristic of certain compounds is much more likely to lead to error when *Staphylococcus aureus* is used rather than *Eberthella typhi* as the test organism. That false values may not be obtained for products of this type, or for any other disinfectant giving suspiciously high results, the subcultures should contain very large amounts of medium (not less than 200 c. c.) or they should be retransferred by carrying at least 4 loopfuls from the first subculture to a second tube of broth, as recommended by Shippen (8).

Other groups of disinfectants in common use, for which the phenol coefficient method of testing is not well adapted, are those compounds containing chlorine as the active agent as well as oxidizing agents in general. These are affected so materially by the presence of organic matter that a phenol coefficient statement may grossly misrepresent their value under practical conditions of use and is very apt to be misleading to the consumer when placed on the label.

Calculation of Phenol Coefficient

THE results of the test are expressed in terms of the phenol coefficient. This represents the germicidal value of the diluted disinfectant as compared with the diluted phenol control. It is a figure obtained by dividing the numerical value of the greatest dilution (the denominator of the fraction expressing the dilution) of the disinfectant capable of killing *Eberthella typhi* in 10 minutes but not in 5 minutes, by the greatest dilution of phenol showing the same results; that is, by the phenol control. Thus, if the results were as follows:

Disinfectant (X):

	5 minutes	10 minutes	15 minutes
1-300	0	0	0
1-325	+	0	0
1-350	+	0	0
1-375	+	+	0
1-400	+	+	+
Phenol:			
1-90	+	0	0
1-100	+	+	+
	350		

The phenol coefficient would be $\frac{350}{90} = 3.89$.

If none of the dilutions show growth in 5 minutes and killing in 10 minutes, the hypothetical dilution may be estimated in certain cases. This may be done only when any three consecutive dilutions show the following results:

The first, no growth in 5 minutes; the second, growth in 10 minutes but not in 15 minutes; and the third, growth in 15 minutes; for example:

If the results were as follows:

Disinfectant (X):

	5 minutes	10 minutes	15 minutes
1-300	0	0	0
1-350	+	+	0
1-400	+	+	+
Phenol:			
1-90	0	0	0
1-100	+	+	0

the estimated phenol coefficient would be $\frac{325}{95} = 3.42$.

To avoid giving an impression of fictitious accuracy, the phenol coefficient is calculated to the nearest 0.1 unless the coefficient is less than 1.0. Thus, in the

examples cited above, the phenol coefficients would be reported as 3.9 and 3.4 instead of 3.89 and 3.42.

In the preceding description, *Eberthella typhi* has been mentioned as the test organism. Wherever any expression of phenol coefficient occurs in literature, on labels, etc., it is assumed to mean the *E. typhi* phenol coefficient, unless otherwise stated. It is, however, the distinct intention of this department not to limit the test to the use of one organism. In fact, the test has been found adaptable to the use of a wide variety of bacterial species in the determination of phenol coefficients. In cases where some of the more strictly parasitic bacteria are used, modifications in media are necessary, and, of course, a change in the phenol dilutions. The writers are not in a position at this time to prescribe the limits of resistance for many of the organisms that might be used. Therefore discussion of the exact technic is here omitted, with the exception of that for *Staphylococcus aureus*. Suggestions for the use of certain representative types may, however, be found in a paper by Reddish (5). When any test organism other than *E. typhi* is used it should be distinctly designated when stating the phenol coefficient.

S. aureus has been found to be an extremely useful organism for testing disinfectants and antiseptics and has been used for this purpose for a number of years. When substituted in the above test the technic remains exactly the same. The phenol dilutions, however, must be changed. The resistance of any strain of *S. aureus* used in this test must come within the following limits: At 20° C. it must survive a 1-60 dilution of phenol for 5 minutes and a 1-70 dilution for 15 minutes. The following is the minimal resistance that would be acceptable:

	5 minutes	10 minutes	15 minutes
Phenol:			
1-60	+	0	0
1-70	+	+	+

In the bacteriological examination of disinfectants, the *Eberthella typhi* and the *S. aureus* phenol coefficients give, in general, sufficient information to render tests with other organisms unnecessary, except in special instances. The commonly accepted criterion that disinfectants for general use be employed at a dilution equivalent to the germicidal efficiency of 5 per cent phenol against *E. typhi* (that is, 20 times the *E. typhi* phenol coefficient) allows a reasonable margin of safety for the destruction of infective agents likely to be the object of general disinfection about premises with the possible exception of *Mycobacterium tuberculosis*. *S. aureus*, due to its ubiquity, resistance and ever-ready tendency to cause infection, should always be employed in testing those substances recommended for personal use or as applications for wounds. If the disinfectant is recommended for use externally the temperature of test should be 20° C., but where such substances are recommended for use in the body cavities, such as for mouth washes, gargles, douches, etc., this test should be conducted at 37°. In such case the test should be designated "The F. D. A. method (special) *S. aureus*, 37° C." At body temperature the *S. aureus* should show the following resistance to phenol:

	5 minutes	10 minutes	15 minutes
1-80	+	0	0
1-90	+	+	+

Or

	5 minutes	10 minutes	15 minutes
1-80	+	0	0
1-90	+	+	0

The previous description of this method (5) differed from this only in allowing a slightly wider latitude in the resistance of the test organism against phenol.

Other Tests for Germicides*

THE limitations of the phenol coefficient make it necessary in some cases to judge the germicidal preparation by other tests or by additional tests. This is particularly true of preparations that are not completely soluble or miscible in water. It is also true of certain preparations designated as antiseptics.

Soluble antiseptics or antiseptics completely miscible with water can be tested, of course, by the procedure already described as the F. D. A. *Staphylococcus aureus* phenol coefficient method. In the testing of these substances, however, the phenol coefficient is not obtained necessarily, the phenol figure being used merely as a check of the resistance of the test organism. The information desired is the concentration which will kill in five minutes.

In an effort to simulate practical conditions, it is frequently advisable to conduct the tests in the presence of blood serum. Sterile horse serum in a concentration of 10 per cent is ordinarily used, both in the germicidal and inhibitory tests. Special claims and uses of a product, however, frequently indicate the desirability of a higher concentration of this organic enrichment.

The following methods designed for the testing of insoluble and immiscible products are in use in this laboratory at the present time. Some of them have been used for years and have been described previously (6). Laboratory tests, of course, cannot duplicate the exact conditions found in practice. The procedures here outlined, however, are as close an approach to practical conditions as is feasible in routine laboratory tests, and reveal the obviously useless preparations. It should be noted that inhibitory tests are considered along with other facts in interpreting whether or not the substance will be of value in practical use. It must be remembered that not only bacteriological but physiological and pharmacological facts frequently must be taken into consideration in judging many substances.

The Wet Filter-Paper Method

The wet filter-paper method is a germicidal test rather than a test of inhibitory properties. It is used when the substance to be tested is not soluble or completely miscible with water, or for substances that are to be used in high concentration, such as soaps, tooth pastes, suppositories, dyes, dusting powders, salves, and ointments. If the substance is to be used in the body cavities the test is carried out at 37° C.; if not, the test is carried out at 20°, or at room temperatures, and the temperature is recorded.

No. 2 Whatman filter paper is cut into pieces about 0.5 cm. square, and sterilized in a plugged test tube at temperatures below 170° C. to prevent charring. A suitable number of the paper squares are then impregnated with *Staphylococcus aureus*, or other test organisms, by immersion in a 24-hour broth culture of the organism. The culture must have the standard resistance required for phenol coefficient testing. The wet inoculated squares are then placed in the liquid or solid substance to be tested in such a way as to be completely covered and in intimate contact. At the end of 5 minutes, 10 minutes, 15 minutes, or 1 hour, or any

* According to current usage the word "antiseptic" has two meanings; to kill bacteria or to prevent their growth, depending upon the use of the product. Products such as salves, ointments, and dressings that remain in contact with the body for long periods of time, may be designated properly as antiseptics if they inhibit the growth of bacteria. On the other hand, mouth washes, douches, gargles, and preparations of like nature are in contact with the body for but brief periods of time and exert negligible inhibitory action. These may be described properly as antiseptics only if they will destroy bacteria under the conditions of use; that is, in the dilutions recommended and in a period of time comparable to that in which they would have an opportunity to act when used as directed.

other desired length of time, the wet papers are removed with a sterilized, stiff, platinum wire bent at a sharp angle to form a hook and placed in 10 c. c. of sterile broth. After as much of the disinfectant as possible has been removed (in the case of sticky substances, the needle must be used to aid in freeing the squares of adherent germicide) the squares are retransferred to a fresh tube of sterile broth (10 c. c.) and the tubes incubated at 37° for 48 hours, when they are observed for evidence of growth.

It will be noted that in this test resubcultures are always required, since the first tube of broth to which the filter-paper squares have been added frequently contains sufficient antiseptic to exhibit inhibition of growth. Both tubes of broth are usually incubated.

The Dry Filter-Paper Method

The dry filter-paper method is used in tests of fumigants and of oils that are to be used where moisture is absent. It is similar to the wet filter-paper test, squares of paper being used that have been impregnated as described under the test above, except the squares are dried for two days in a sterile Petri dish in the 37° C. incubator. This test can be used successfully only with organisms capable of resisting the drying. *Eberthella typhi* will not withstand the drying. In the writers' work *Staphylococcus aureus* is the usual test organism. The inoculated dried paper squares may be used at any time after drying up to 30 days, but the resistance of the organism at no time should fall so low that it is incapable of withstanding a 1:80 dilution of phenol for five minutes at 20°. It should be noted that control tests with non-medicated squares should always be carried out to test the viability of the test organism. As in the West filter-paper method, resubcultures are always necessary.

The Agar-Plate Method

The agar-plate method is a test for inhibitory properties and is used for substances remaining in contact with the body in the absence of serous body fluids. Examples of substances which may be tested by this method are salves, dusting powders, creams, plasters, pads, adhesive tape, catgut, and suppositories. The test organism ordinarily used is *Staphylococcus aureus*, but for special purposes the test may be used with any organism capable of growing on agar. The agar is of the same composition as that previously described for carrying stock cultures of the test organism.

Fifteen to twenty cubic centimeters of agar is melted and cooled to 42°-45° C. To this is added 0.1 c. c. of a 24-hour broth culture of the test organism. The inoculated agar is then poured into sterile Petri plates and allowed to harden. As soon as the agar has hardened, the test substance is placed in intimate contact with the surface of the agar. If a salve, it is first warmed just sufficiently to soften it and thus secure a complete peripheral contact. As a control, warmed sterile petroleum may be placed on another portion of the plate. The plates are incubated 24-48 hours under unglazed porcelain tops at 37° C. and then are examined for evidence of inhibition. If the preparation is antiseptic or inhibitory, a zone of clear agar will be noted around the place where the substance has been in contact and the width of the zone will indicate the diffusibility of the inhibitory (antiseptic) agent. If there is no inhibition, growth of the test organism will be observed adjacent to and even under the test substance.

The Serum Agar-Plate Method

Preparations recommended for use on open wounds, cuts, etc., will be effective only if they exhibit activity in the presence of serous fluids. In testing such preparations the agar-plate method is modified by the addition of 10 per cent sterile horse serum to the agar.

The Agar Cup-Plate Method⁵

The agar cup-plate method is merely a variation of the agar-plate method. It is to be used on products liquid at the temperature of the test. The agar or serum agar is inoculated as in the agar-plate method. Before the agar cools, a depression or cup is made in the medium by standing a sterile flat-bottomed glass tube, 1.5 cm. in diameter, in the liquefied agar. On hardening, the glass tube is removed by slightly twisting and pulling at the same time. Insertion of a sterile wire down the side of the tube for the introduction of air will eliminate much of the cracking of the agar. Another method of preparing the agar cup-plate is to allow the medium to harden and then cut out a disk in the agar, by means of a cork borer, 1.5 cm. in diameter. One or two drops of melted agar are placed in the cup to seal cracks or crevices. After the agar cup-plate is prepared, 6 drops of the liquid to be tested are placed in the cup and the plate incubated under an unglazed porcelain top for 24 to 48 hours. If there is a clear zone about the cup, the substance under test has inhibitory properties. Here, as well as in the agar-plate test, the agar in the clear zone may be tested for growth by subculture in broth to indicate whether the action is germicidal or merely inhibitory.

Tests in the Presence of Organic Matter

In general, the tests outlined above will take care of the bulk of the preparations coming to this laboratory. However, special tests may be required to determine the value of products recommended for certain purposes. For instance, recommendations on the label may make advisable the use of various additions of organic matter, such as increased amounts of peptone or the addition of gelatin, blood, ascitic fluid, saliva, urine, or feces, depending upon the information desired.

Method Applicable in a Given Case

Substance	Method Applicable
Soluble disinfectants:	
A. Preparations for general use.	Phenol coefficient — <i>E. typhi</i> at 20° C.
B. Preparations for antiseptic use.	Phenol coefficient technique — <i>S. aureus</i> 20° C. or 37° C. as indicated.
C. Preparations for surgical instruments.	Phenol coefficient technique — <i>S. aureus</i> 20° C.
Insoluble and concentrated disinfectants:	
A. Preparations for general use (oils, tarry substances, powders, lime, etc.).	Wet filter paper— <i>E. typhi</i> and <i>S. aureus</i> . Room temperature.
B. Preparations for use on dry surfaces (spraying oils, sweeping compounds, powders, lime).	Dried filter paper— <i>S. aureus</i> . Room temperature.
C. Preparations for fumigation (filter paper and exposed to gas in confined space).	Wet filter paper— <i>E. typhi</i> and <i>S. aureus</i> ; room temperature. Dried filter paper— <i>S. aureus</i> ; room temperature. (Extension of time may be indicated.)
Soluble and liquid antiseptics:	
A. Preparations to be applied for a short time (washes, mouth washes, gargles, douches, etc.).	Phenol coefficient technique — <i>S. aureus</i> 20° C. or 37° C. as indicated.

Substance	Method Applicable
B. Preparations for use on open wounds, etc. (washes).	Phenol coefficient technic — <i>S. aureus</i> 20° C. or 37° C. as indicated. (Tested in presence of 10 per cent serum.)
C. Preparations remaining on site of application (dyes, wet dressings, rubbing preparations, etc.).	Agar cup-plate.
D. Preparations for use on open wounds, etc. (dyes, wet dressings, etc.).	Serum agar cup-plate.
E. Preparations remaining on site of application but claiming germicidal properties.	Wet filter paper— <i>S. aureus</i> 37° C. Extension of time may be indicated.
solid soluble antiseptics: A. Lozenges, tablets, etc.	Wet filter paper— <i>S. aureus</i> 20° C. or 37° C. as indicated. Note: Saturated aqueous solution or in dilution indicated.
nsoluble and concentrated antiseptics: A. Preparations remaining on site of application (dusting powders, ointments, salves, suppositories, plasters, dressings, etc.)	Agar plate.
B. Preparations remaining on site of application but claiming germicidal properties.	Wet filter paper— <i>S. aureus</i> 37° C. Extension of time may be indicated.
C. Preparations for use on open wounds, etc.	Serum agar plate.
ntiseptic materials, appliances, etc.: A. Bandages, dressings, catgut, etc. B. Tape, pads, etc.	Serum agar plate. Agar plate.

⁵ The authors are indebted to L. C. Himebaugh for this method.

⁶ In the cases where chlorine compounds are used for this purpose the effectiveness is usually judged on the basis of "available" chlorine content.

⁷ Intestinal antiseptics do not readily lend themselves to laboratory tests. When medical opinion concerning the physiological and therapeutic properties of such preparations is to be confirmed by the results of bacteriological tests, the products may be considered to be germicidal only when tested in the presence of liberal amounts of organic matter, such as saliva, feces, etc.

Disinfectants and antiseptics for use in the absence of organic matter:
A. Preparations for drinking water.⁵

Phenol coefficient technic
—*E. typhi* 20° C. (Note:
0.1 c. c. of culture to 10
c. c. of diluted preparation.)

Intestinal antiseptics.⁷

Figures Useful in Making Dilutions in Testing Disinfectants (11)

(5 c. c. of disinfectant + 95 c. c. of distilled water = solution A)

Dilution	Solution A C. c.	Distilled water C. c.	Solution A C. c.	Distilled water C. c.	Solution A C. c.	Distilled water C. c.
1:20	= 20	+	0	or 10	+	0
1:25	= 20	+	5	or 10	+	2½
1:30	= 20	+	10	or 10	+	5
1:35	= 20	+	15	or 10	+	7½
1:40	= 20	+	20	or 10	+	10
1:45	= 20	+	25	or 10	+	12½
1:50	= 20	+	30	or 10	+	15
1:55	= 20	+	35	or 10	+	17½
1:60	= 20	+	40	or 10	+	20
1:65	= 20	+	45	or 10	+	22½
1:70	= 20	+	50	or 10	+	25
1:80	= 20	+	60	or 10	+	30
1:90	= 20	+	70	or 10	+	35
1:100	= 20	+	80	or 10	+	40
1:110	= 20	+	90	or 10	+	45
1:120	= 20	+	100	or 10	+	50
1:130	= 20	+	110	or 10	+	55
1:140	= 20	+	120	or 10	+	60
1:150	= 20	+	130	or 10	+	65
1:160	= 20	+	140	or 10	+	70
1:170	= 20	+	150	or 10	+	75
1:180	= 20	+	160	or 10	+	80
1:200	= 20	+	180	or 10	+	90
1:200	= 20	+	180	or 4	+	36
1:225	= 20	+	205	or 4	+	41
1:250	= 20	+	230	or 4	+	46
1:275	= 20	+	255	or 4	+	51
1:300	= 20	+	280	or 4	+	56
1:325	= 20	+	305	or 4	+	61
1:350	= 20	+	330	or 4	+	66
1:375	= 20	+	355	or 4	+	71
1:400	= 20	+	380	or 4	+	76
1:450	= 20	+	430	or 4	+	86
1:500	= 20	+	480	or 4	+	96

(1 c. c. of disinfectant + 99 c. c. of distilled water = solution B)

Dilution	Solution B C. c.	Distilled water C. c.	Solution B C. c.	Distilled water C. c.	Solution B C. c.	Distilled water C. c.
1:100	= 100	+	0	or 10	+	0
1:110	= 100	+	10	or 10	+	1
1:120	= 100	+	20	or 10	+	2
1:130	= 100	+	30	or 10	+	3
1:140	= 100	+	40	or 10	+	4
1:150	= 100	+	50	or 10	+	5
1:160	= 100	+	60	or 10	+	6
1:180	= 100	+	80	or 10	+	8
1:200	= 100	+	100	or 10	+	10
1:225	= 100	+	125	or 10	+	12½
1:250	= 100	+	150	or 10	+	15
1:275	= 100	+	175	or 10	+	17½
1:300	= 100	+	200	or 10	+	20
1:325	= 100	+	225	or 10	+	22½

Dilution	Solution B C. c.	Distilled water C. c.	Solution B C. c.	Distilled water C. c.	Solution B C. c.	Distilled water C. c.
1:350	= 100	+	250	or 10	+	25
1:375	= 100	+	275	or 10	+	27½
1:400	= 100	+	300	or 10	+	30
1:400	= 10	+	30	or 4	+	12
1:450	= 10	+	35	or 4	+	14
1:500	= 10	+	40	or 4	+	16
1:550	= 10	+	45	or 4	+	18
1:600	= 10	+	50	or 4	+	20
1:650	= 10	+	55	or 4	+	22
1:700	= 10	+	60	or 4	+	24
1:750	= 10	+	65	or 4	+	26
1:800	= 10	+	70	or 4	+	28
1:850	= 10	+	75	or 4	+	30
1:900	= 10	+	80	or 4	+	32
1:900	= 5	+	40	or 4	+	32
1:1,000	= 5	+	45	or 4	+	36
1:1,100	= 5	+	50	or 4	+	40
1:1,200	= 5	+	55	or 4	+	44
1:1,300	= 5	+	60	or 4	+	48
1:1,400	= 5	+	65	or 4	+	52
1:1,500	= 5	+	70	or 4	+	56
1:1,600	= 5	+	75	or 4	+	60
1:1,700	= 5	+	80	or 4	+	64
1:1,800	= 5	+	85	or 4	+	68
1:2,000	= 5	+	95	or 4	+	76
1:2,200	= 5	+	105	or 4	+	84
1:2,400	= 5	+	115	or 4	+	92
1:2,600	= 5	+	125	or 4	+	100
1:2,800	= 5	+	135	or 4	+	108
1:3,000	= 5	+	145	or 4	+	116
1:3,200	= 5	+	155	or 4	+	124

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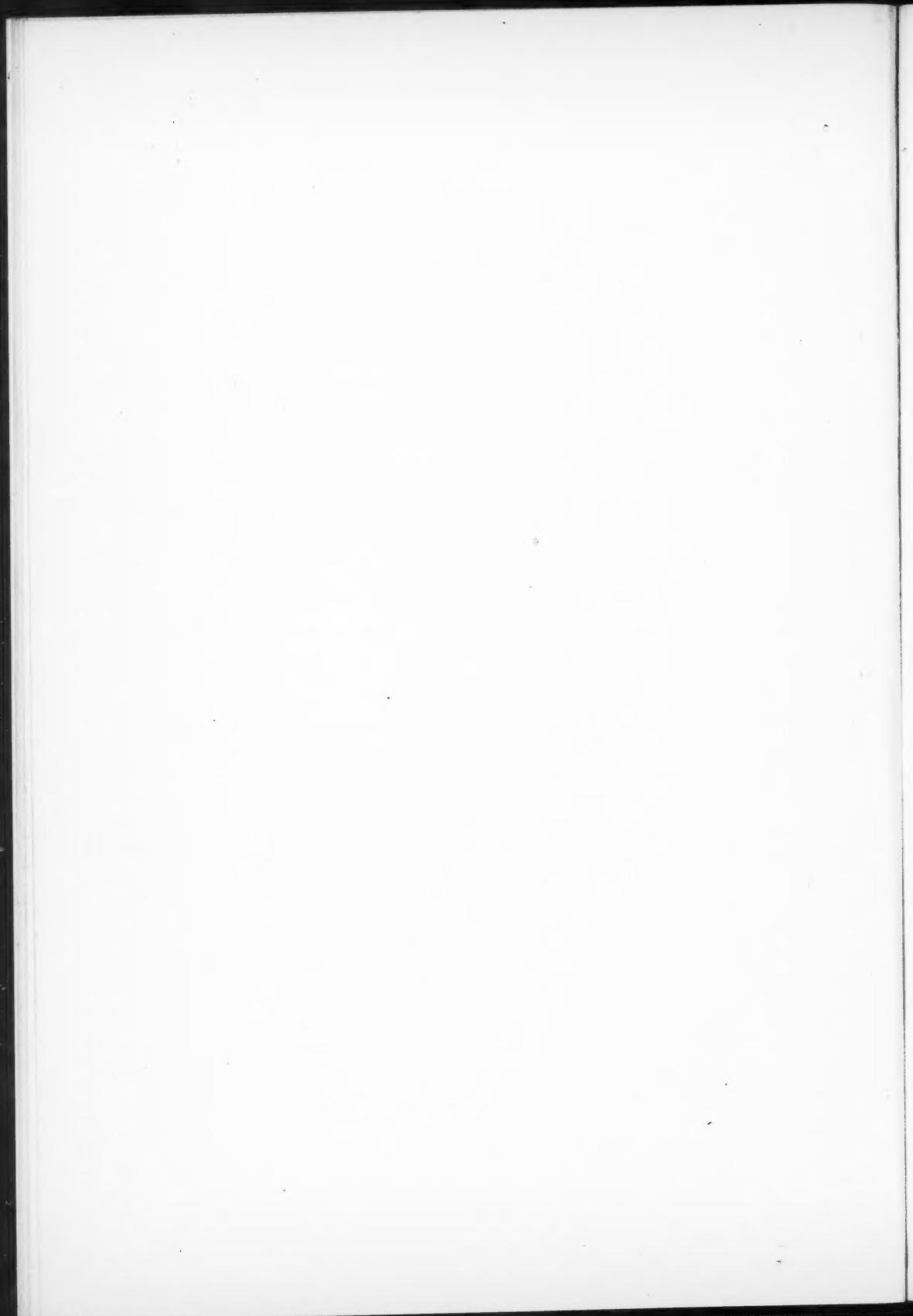
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Comparative Values of Caustic Soda Solutions

NaOH %	Na ₂ O %	Bé	Sp. Gr. 60° F. @.....	Tw. 60° F.	Sp. Gr. 60° F. @.....		Tw. 60° F.	Sp. Gr. 60° F. @.....
					NaOH %	Na ₂ O %		
1	.77	1.6	2.2	1.011	26	20.18	32.4	57.6
2	1.55	3.1	4.4	1.022	27	20.95	33.4	59.4
3	2.32	4.6	6.6	1.033	28	21.70	34.3	62.0
*	4	3.10	6.3	1.045	29	22.40	35.2	64.0
5	3.88	7.7	11.2	1.056	30	23.15	36.1	66.2
6	4.65	9.1	13.4	1.067	31	24.00	36.9	68.2
7	5.39	10.5	15.6	1.078	32	24.80	37.8	70.4
8	6.20	11.9	17.3	1.089	33	25.60	38.6	72.4
9	6.98	13.2	20.0	1.100	34	26.38	39.4	74.6
10	7.75	14.5	22.2	1.111	35	27.15	40.2	76.6
11	8.53	15.8	24.4	1.122	36	27.90	40.9	78.6
12	9.30	17.1	26.6	1.133	37	28.70	41.7	80.6
13	10.09	18.3	28.8	1.144	38	29.45	42.4	82.6
14	10.85	19.5	31.0	1.155	39	30.22	43.1	84.6
15	11.62	20.7	33.4	1.167	40	31.00	43.8	86.6
16	12.40	21.9	35.6	1.178	41	31.80	44.5	88.6
17	13.20	23.1	37.8	1.189	42	32.60	45.2	90.6
18	13.98	24.2	40.0	1.200	43	33.35	45.9	92.6
19	14.72	25.2	42.0	1.210	44	34.10	46.5	94.4
20	15.50	26.3	44.2	1.221	45	34.90	47.1	96.2
21	16.30	27.4	46.6	1.233	46	35.66	47.8	98.2
22	17.08	28.5	48.8	1.244	47	36.45	48.4	100.2
32	17.85	29.5	51.0	1.255	48	37.22	49.0	102.0
24	18.60	30.5	53.2	1.266	49	37.99	49.6	104.0
25	19.40	31.5	55.4	1.277	50	38.75	50.2	105.8



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NEW YORK, N. Y.

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ESTABLISHED 1838

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Olive Oil	Olive Oil Foots	Fatty Acids
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METSO	COTTONSEED SOAPSTOCK	PALM OIL
SODA ASH	BOILED-DOWN COTTONSEED SOAP	OLEO STEARINE
SAL SODA	NEATSFOOT OIL	CORN OIL
MODIFIED SODA	CASTOR OIL	PEANUT OIL
TRISODIUM PHOSPHATE	SESAME OIL	TALLOW
CAUSTIC POTASH	PALM KERNEL OIL	GREASE
CARBONATE POTASH	STEARIC ACID	SUPERFATTING
BATH POWDER	RED OIL	NEUTRALIZING
TALC	SOYA BEAN OIL	AGENTS

